V13471

SL-340/S500/S505

RMT-156

SERVICE MANUAL

SL-340
US Model
SL-S500/S505
E Model

This photo is SL-S500

Refer to "NOTE ON TYPES OF SL-340/S500/S505" on page 3.

Remote commander RMT-156 is available as a unit, but individual parts the battery case lid of commander is only available.

Super Betamax
711B3 CHASSIS

SPECIFICATIONS

System

Video recording system	Rotary two-head helical scanning
Video signal	EIA standards, NTSC color
Channel coverage	VHF channels 2 – 13 UHF channels 14 – 69 Cable TV channels 14 – 36, 66 – 125
VHF output signal	Channel 3 or 4 (selectable) 75 ohms, unbalanced
Antenna	75-ohms external antenna terminal for VHF/UHF

Video

Input	LINE IN VIDEO: phono jack 1.0 V (p-p), 75 ohms, unbalanced, sync negative
Output	LINE OUT VIDEO: phono jack 1.0 V (p-p), 75 ohms, unbalanced, sync negative

Audio

Input	LINE IN AUDIO: phono jack More than 47 kilohms, −10 dBs (0 dBs = 0.775 Vrms)
Output	LINE OUT AUDIO: phono jack Less than 10 kilohms, −10 dBs (47 kilohms load), unbalanced
Frequency response	βII : 50 – 10,000 Hz βIII: 50 – 7,000 Hz

Tape transport

Tape speed	βIs: 4.0 cm/sec. (playback only) βII : 2.0 cm/sec. βIII: 1.33 cm/sec.
Maximum recording time	βII : 3 hours βIII: 4 hours 30 min. (with Sony L-750 cassette)
Fast-forward time	Approx. 5½ min. (L-500)
Rewind time	Approx. 4½ min. (L-500)

Timer

Clock	Synchronized with the power frequency
Time indication	12-hour cycle
Timer setting	Only for recording 1 event/7 days or every day

General

Power requirements	120V AC±10%, 50/60Hz±0.5% (SL-S500) 120V or 220V AC±10% adjustable, 50/60Hz±0.5% (SL-S505) 120V AC±10%, 60Hz±0.5% (SL-340)
Power consumption	26W (SL-S500/340), 28W (SL-S505)
Operating temperature	5°C to 40°C (41°F to 104°F)
Storage temperature	−20°C to +60°C (−4°F to +140°F)
Dimensions	Approx. 430 × 95 × 368 mm (w/h/d) (17 × 3¾ × 14½ inches) incl. projecting parts and controls
Weight	Approx. 6.0 kg (13 lb 4 oz)

— continued on next page —

Beta
β VIDEO CASSETTE RECORDER

SONY®

MICROFILM

38

Remote commander RMT-156

Remote control system	Infrared control
Command mode	VTR-1
Power requirements	3 V DC, two R6 batteries (size AA)
Dimensions	Approx. 45 × 18 × 150 mm (w/h/d) ($1\frac{13}{16} \times \frac{23}{32} \times 6$ inches) including projecting parts and controls
Weight	Approx. 90 g (3.2 oz) with batteries

Accessories supplied

Remote Commander RMT-156 with two AA batteries (size R6)
External antenna connector (300-ohm to 75-ohm matching transformer) (1)
75-ohm coaxial cable with F-type connectors (1)
AC power plug adapter (1) (SL-S505)

Optional accessories

Betamax video cassette tape
Video head cleaning cassette L-25CL

Design and specifications are subject to change without notice.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
6. Check the B+ voltage to see it is at the values specified.
7. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

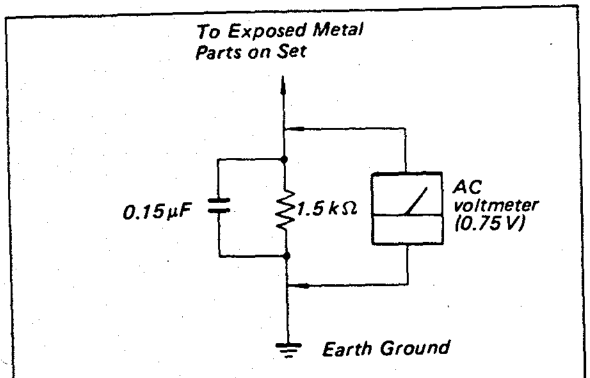


Fig. A. Using an AC voltmeter to check AC leakage.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

TABLE OF CONTENS

Section *Title* *Page*

1. GENERAL

1-1. Location and Function of Controls 4
1-2. Timer-activated Recording 5
1-3. Presetting the Active Channels in Your Area .. 6

2. DISASSEMBLY

2-1. Removal of the Cabinet 7
2-2. Removal (Opening) of the Main Boards 7
2-3. Removal of the Power Block 7
2-4. Removal of the Reel Base Assembly 7
2-5. Removal of the Cassetle Compartment Assembly 8
2-6. Removal of the Mechanical Chassis Block 8
2-7. Internal Views 9

3. DIAGRAMS

3-1. Circuit Boards Location 10
3-2. Overall Block Diagram 11
3-3. Video Block Diagram 13
3-4. Servo Block Diagram 17
3-5. IC901 Digital Servo IC terminal 19
3-6. System Control Block Diagram 23
3-7. System Control-Video, Audio Interface 25
3-8. System Control-Servo Interface 25
3-9. System Confrol-Tuner Interface 26
3-10. System Control-Mechanism Block Interface 27
3-11. Normal Audio Block Diagram 28
3-12. Tuner Block Diagram 29
3-13. Power Block Diagram 31

4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM

4-1. Frame Sohematic Diagram 33
4-2. Printed Wiring Boards and Schematic Diagram 35
- RP-67 Board 35
- VS-33 Board (Video) 39
- VS-33, DR-50, TJ-4 and GM-8 Board 45
- MF-39and MF-40 Board 52
- PS-197 and VS-36 Board 57

4-3. Semiconductors 60

Section *Title* *Page*

5. EXPLODED VIEWS

5-1. Front Panel, Cover Assembly 61
5-2. Main Board Assembly 62
5-3. Front Loading Assembly 63
5-4. Chassis Assembly 1 64
5-5. Chassis Assembly 2 65
5-6. Chassis Assembly 3 66
5-7. Drum Assembly 67
5-8. Reel Base Assembly 68

6. ELECTRICAL PARTS LIST 69
HARDWARE LIST 79

7. MECHANICAL ADJUSTMENTS

7-1. Removal of the Rotary Head Disk Assembly .. 80
7-2. Mounting of the Rotary Head Disk Assembly .. 80
7-3. Caution for Replacing the Drum Assembly 80

8. ELECTRICAL ADJUSTMENTS

8-1. Power Supply Check 82
8-2. System Control Check 82
8-2-1. Clock Frequencv Check 82
8-3. Servo System Adjustment 83
8-3-1. Drum/Capstan Servo System Adjustment 83
8-4. Video System Adjustment 84
8-4-1. Playback System Adjustment 84
8-4-2. Record System Adjustment 85
8-5. Audio System Adjustment 88
8-6. Tuner System Adjustment 89
8-7. Adjustment Element Location 90

NOTE ON TYPES OF SL-340/S500/S505

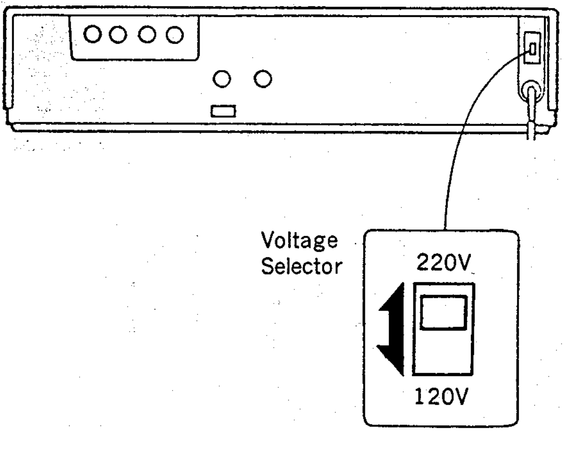
This Service manual covers three types of models: SL-340 (US), SL-S500 (E2), SL-S505 (E1).

The principal defferences among the models are indicated in the following table. The differences are clealy mentioned text as required.

Model	Operating voltage and frequency	Area Where the model is available
SL-340	120V AC, 60Hz	US
SL-S500	120V AC, 50/60Hz	E2
SL-S505	120V AC or 220V AC Adjustable, 50/60Hz	E1

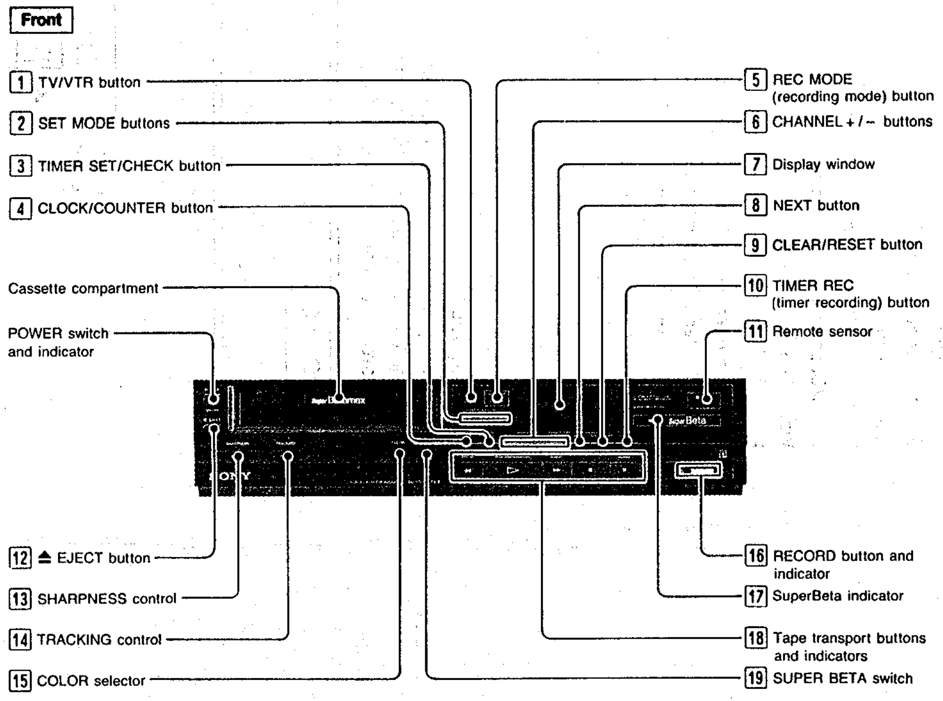
- E1 Model (SL-S505)

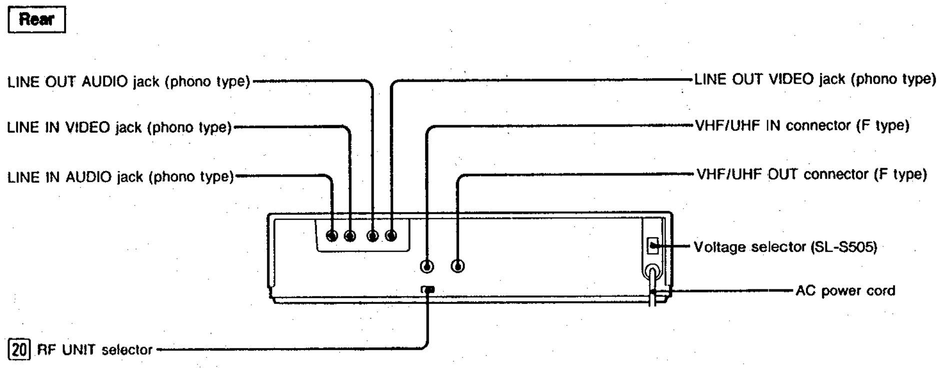
Befor connecting the unit to the power source, be sure to check that the voltage selector at the rear to the appropriate position according to your local power supply.



SECTION 1
GENERAL

1-1. LOCATION AND FUNCTION OF CONTROLS


Front
1 TV/VTR button
2 SET MODE buttons
3 TIMER SET/CHECK button
4 CLOCK/COUNTER button
Cassette compartment
POWER switch and indicator
12 ≜ EJECT button
13 SHARPNESS control
14 TRACKING control
15 COLOR selector
5 REC MODE (recording mode) button
6 CHANNEL + / – buttons
7 Display window
8 NEXT button
9 CLEAR/RESET button
10 TIMER REC (timer recording) button
11 Remote sensor
16 RECORD button and indicator
17 SuperBeta indicator
18 Tape transport buttons and indicators
19 SUPER BETA switch


Rear
LINE OUT AUDIO jack (phono type)
LINE IN VIDEO jack (phono type)
LINE IN AUDIO jack (phono type)
20 RF UNIT selector
LINE OUT VIDEO jack (phono type)
VHF/UHF IN connector (F type)
VHF/UHF OUT connector (F type)
Voltage selector (SL-S505)
AC power cord

1 **TV/VTR button**
Press this button to watch the program selected on the recorder. The VTR indicator appears in the display window. (The VTR indicator appears automatically when ► PLAY is pressed.)
To watch a different TV program while recording another, press this button again. The VTR indicator disappears.

2 **SET MODE buttons**
CLOCK: Press to start the setting of the current time.
PRESET: Press to start the presetting of TV channels.
FINE: Press to start the fine-tuning of a TV channel.
Press the same button again to cancel the setting mode.

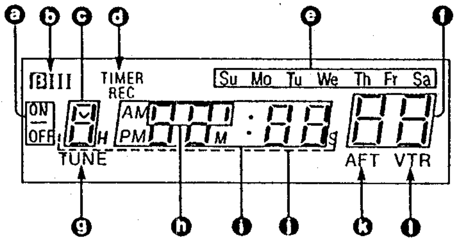
3 **TIMER SET/CHECK button**
Press to start the setting or checking of the timer program.

4 **CLOCK/COUNTER button**
Press this button to select the clock display or the tape counter display.

5 **REC MODE button**
Selects the recording speed.

6 **CHANNEL + / – buttons**
Press to select the channels, to set the clock or timer, or to preset channels.
When you keep a button pressed, the digits will advance continuously until the button is released.
When you press and immediately release a button, the digits will advance by one.

7 **Display window**


ⓐ
ⓑ
ⓒ
ⓓ
ⓔ
ⓕ
ON
OFF
TIMER REC
Su Mo Tu We Th Fr Sa
AM
PM
H
M
S
TUNE
AFT
VTR
ⓖ
ⓗ
ⓘ
ⓙ
ⓚ
ⓛ

ⓐ **Timer turn-on and turn-off setting indicators**
ⓑ **Tape speed indicator**
ⓒ **Tuning band indicator**
ⓓ **TIMER REC (timer recording) indicator**
ⓔ **Day-of-the-week indicators**
ⓕ **Channel number**
ⓖ **TUNE indicator**
ⓗ **Channel scanning indicator**
ⓘ **Clock, timer turn-on time or timer turn-off time**
ⓙ **Tape counter**
ⓚ **AFT (Automatic Fine Tuning) indicator**
ⓛ **VTR indicator**

8 **NEXT button**
Press to advance to the next item to be set during clock setting, timer setting or channel presetting.

9 **CLEAR/RESET button**
Press this button to reset the tape counter to "0H00M00S" and also to clear the timer setting or an unused channel.

10 **TIMER REC button**
Press to activate the timer recording.

11 **Remote sensor**
Detects the signals transmitted from the Remote Commander.

12 **≜ EJECT button**
Press this button to eject the cassette.

13 **SHARPNESS control**
Adjust the sharpness of the picture if necessary.

14 **TRACKING control**
Adjust this control to obtain the best possible picture if streaks or snow appears during playback.

15 **COLOR selector**
Adjust the color intensity of the playback picture.

16 **RECORD button and indicator**
Press this button to start recording.

17 **SuperBeta indicator**
Lights when the SUPER BETA switch is set to ON.

18 **Tape transport buttons and indicators**
◄◄ REW (rewind), ► PLAY, ►► FF (fast forward), ■ STOP, ▮▮ PAUSE

19 **SUPER BETA switch**

20 **RF UNIT selector**
Select the channel for the VCR program and the output from the VHF/UHF OUT connector. Set the selector to 3 CH or 4 CH whichever is not active in your area.

1-2. TIMER-ACTIVATED RECORDING

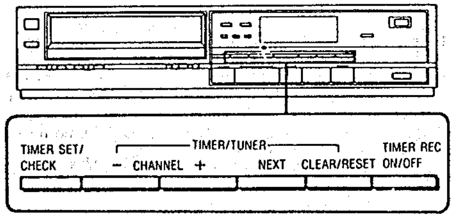
One recording can be preset to be made for any day or every day within seven days.

The clock time must first be set to the correct current time. To set the clock. see page 20.

Before Setting the Timer

- Make sure the cassette tape is long enough to record programs.
- Be sure the safety tab has not been removed. — If removed, the cassette will be automatically ejected when TIMER REC is pressed.
- Press POWER to turn the power on.
- Be sure a cassette is inserted in the compartment.
- Select the recording tape speed. Check the βII or βIII indicator in the window.
- Set SUPER BETA to ON.
- Make sure that nothing is connected to the LINE IN VIDEO and AUDIO jacks at the rear.

Suppose you want to make a recording of channel 6 from 7:10 to 11:15 on Friday evening.



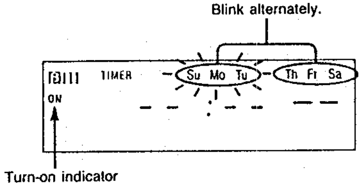
CHANNEL +/– buttons
To set the day of the week, the time and the channel, press the + button to advance, and the – button to reverse.

NEXT button
Every time you press the NEXT button, the item to be preset will blink and you will be setting the item.

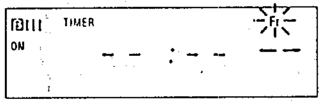
Day indication
By pressing the + button, the day indication changes as follows:
Ex. Today is Friday.

Su Mo Tu We Th Fr Sa → Fr → Sa → ... → Th
(every day) (today) (tomorrow)

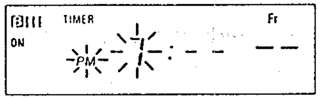
1 Press TIMER SET.



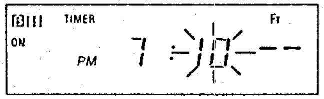
2 Set the day with the + or – button.



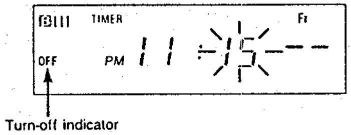
3 Press NEXT and set the turn-on hour with the + or – button.
Make sure that AM or PM is properly set.
AM 12:00 = midnight
PM 12:00 = noon



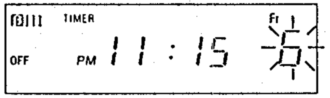
4 Press NEXT and set the minute with the + or – button.



5 Press NEXT and set the turn-off time as in steps 3 and 4.

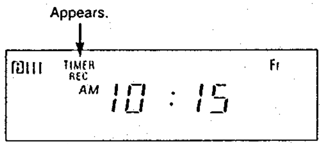


6 Press NEXT and set the channel to be recorded with the + or – button.



7 Press NEXT.
The turn-on time and turn-off time will be displayed for 3 seconds respectively and the current time will reappear.

8 Press TIMER REC.
The power will be turned off and the recorder will be in the standby mode.



Recording will start at the preset time and will automatically stop when the recording is completed.
When the recording is finished, the programming (except the everyday setting) will be eliminated.

NOTICE:
ONCE THE TIMER REC INDICATOR HAS BEEN DISPLAYED, only the functions of TIMER SET/CHECK and TIMER REC on the recorder can be activated. To turn on the power again for the usual manual operations, press TIMER REC again so that the indicator turns off. This does "not" affect the memory of the timer. As long as you press it again, timer recording will be made exactly as preset.

Before the Timer-activated Recording Starts

To check the timer settings
When the TIMER REC indicator is displayed, press TIMER SET/CHECK. The preset turn-on time and turn-off time will be displayed for 3 seconds respectively and the current time will reappear.

To change the settings
1 Press TIMER REC. The TIMER REC indicator turns off.
2 Press TIMER SET/CHECK.
3 Press NEXT enough times until the item to be changed blinks.
4 Change the setting with the + or – button.
5 Press NEXT so that the current time appears.
6 Press TIMER REC again to reactivate the timer.

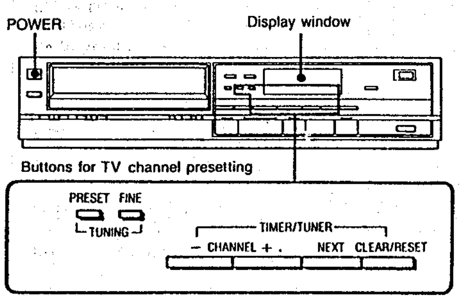
To erase the memory of the timer settings
1 Press TIMER REC. The TIMER REC indicator turns off.
2 Press TIMER SET/CHECK.
3 Press CLEAR/RESET. The memory of the settings will be eliminated.

To stop during a timer recording
Press TIMER REC. The recording will stop and the power will be turned off.

If the power should be interrupted during timer recording
When the recorder is in the standby mode, the timer settings have been erased. Reset the clock and timer settings.
If the power interruption occurs while recording, the recording will then stop.

1-3. PRESETTING THE ACTIVE CHANNELS IN YOUR AREA

Your recorder is capable of receiving VHF channels 2–13, UHF channels 14–69 and cable TV channels 14–36 (A to W) and 66–125 (A-5 to A-1 and W+30 to W+84). See cable TV channel chart. You can preset 14 channels so that only the desired channels will appear in sequence when you select a channel later on.


POWER
Display window
Buttons for TV channel presetting
PRESET FINE
TUNING
TIMER/TUNER
– CHANNEL +
NEXT
CLEAR/RESET

Before Presetting

- Turn on the recorder and TV.
- Make sure that the TV is set to the correct channel (channel 3 or 4) for the recorder.
- Make sure that nothing is connected to the LINE IN VIDEO and AUDIO jacks.

Presettng Channels

1 Press PRESET.
The channel memory position will blink.

2 Select a channel memory position with CHANNEL+/– for the desired channel to be tuned in.

3 Press NEXT.
The band indicator and the channel scanning indicator will blink.

4 Tune in the desired channel.
Press CHANNEL+ to tune in a higher-numbered channel, or – to tune in a lower-numbered channel.

If the first channel appearing on the screen is not the one you wish, repeat pressing CHANNEL+ or – until the desired channel appears.

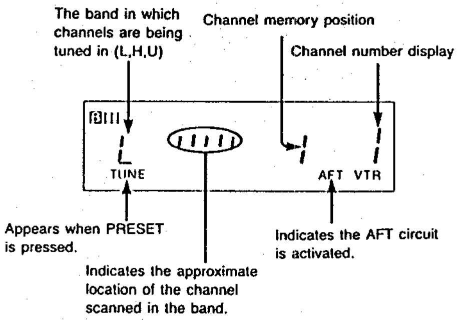
5 Press NEXT.
The channel number display will blink.

6 Change the channel number display to identify the channel being received.
Press CHANNEL+ for a higher number, or – for a lower number.

7 Press NEXT.
The current time will reappear.

Repeat steps 1 to 7 for other channel memory positions to be preset.

Check in the window during presetting


The band in which channels are being tuned in (L,H,U)
Channel memory position
Channel number display
TUNE
AFT VTR
Appears when PRESET is pressed.
Indicates the approximate location of the channel scanned in the band.
Indicates the AFT circuit is activated.

To Cancel an Unused Channel

1 Press PRESET.
The channel memory position will blink.

2 Select the channel to be cancelled with CHANNEL + or –.

3 Press CLEAR/RESET.
The channel number display will be changed to "- -".

Then the cancelled channel will be skipped when CHANNEL+/– is pressed.

To Fine-tune a Weak Station

When the picture of a particular channel is not acceptable, fine tune the channel as follows.

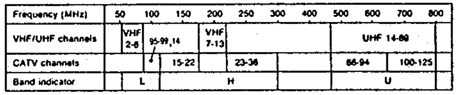
1 Press FINE.
The band indicator and the channel scanning indicator will blink.

2 Keep CHANNEL+ or – pressed until the picture becomes clearer.
The AFT indicator goes off.

3 Press NEXT.
The current time will reappear.

AFT (Automatic Fine Tuning) circuit
When a channel is preset, the AFT circuit will automatically lock in to maintain a sharp picture. When the channel is once fine tuned, the AFT is deactivated and the AFT indicator goes off. To reactivate the AFT on that channel, repeat the channel presetting procedure.

Channel Allocation Chart


Frequency (MHz)
50
100
150
200
250
300
400
500
600
700
800
VHF/UHF channels
VHF 2-6
95-99,14
VHF 7-13
UHF 14-69
CATV channels
15-22
23-36
66-94
100-125
Band indicator
L
H
U

When CHANNEL+ is pressed, the above channels will be scanned from the lowest frequency to the highest in sequence. By pressing CHANNEL–, the channels will be scanned reversely.

Cable TV Channel Chart*

Cable TV systems use letters or numbers to designate channels as in the following chart.

CATV channels in numbers	95	96	97	98	99	14
CATV channels in letters	A-5	A-4	A-3	A-2	A-1	A

15	16	17	18	19	20	21	22	23	24
B	C	D	E	F	G	H	I	J	K

25	26	27	28	29	30	31	32	33	34
L	M	N	O	P	Q	R	S	T	U

35	36	66	.....	.....	.....	.....	94	100	101
V	W	W+30	.....	.....	.....	.....	W+58	W+59	W+60

102	.....	.....	123	124	125
W+61	.....	.....	W+82	W+83	W+84

Check with your local cable TV company for more complete information on the available channels.

*The designation of the cable TV channels conforms to the EIA/NCTA recommendation.

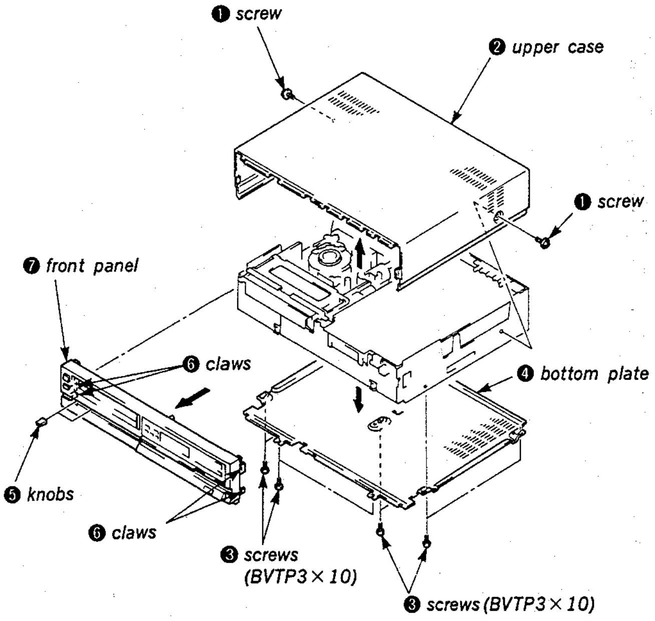
Note

Pay cable TV systems use scrambled or encoded signals and require special converters (decoders) in addition to the normal cable connection.

SECTION 2
DISASSEMBLY

2-1. REMOVAL OF THE CABINET

1) Remove two screws ❶, and then the upper case ❷ in the direction of arrow.
2) Remove eight screws ❸, and then, the bottom plate ❹ in the direction of arrow.
3) Remove two knobs ❺.
4) Remove four claws ❻, and then, the front panel ❼ in the direction of arrow.

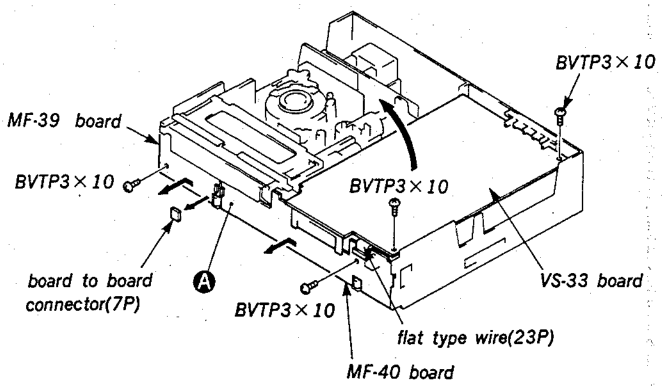

❶ screw
❷ upper case
❶ screw
❼ front panel
❻ claws
❹ bottom plate
❺ knobs
❻ claws
❸ screws (BVTP3 × 10)
❸ screws (BVTP3 × 10)

2-2. REMOVAL (OPENING) OF THE MAIN BOARDS
• VS-33 BOARD

1) Remove two screws.
2) Remove the flat type wire, and open the VS-33 board in the direction of arrow.

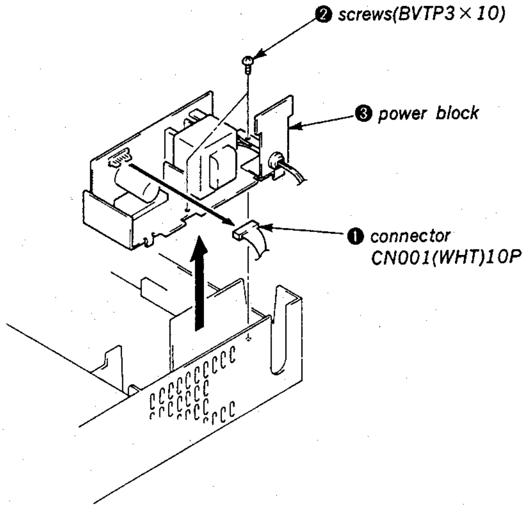
• MF-39,40 BOARDS

1) Remove the board to board connector.
2) Remove the screws, and slide MF-39, 40 boards to the left and remove it. (Slide MF-40 board to the left while raising the portion Ⓐ.)


BVTP3 × 10
MF-39 board
BVTP3 × 10
BVTP3 × 10
board to board connector(7P)
Ⓐ
BVTP3 × 10
VS-33 board
flat type wire(23P)
MF-40 board

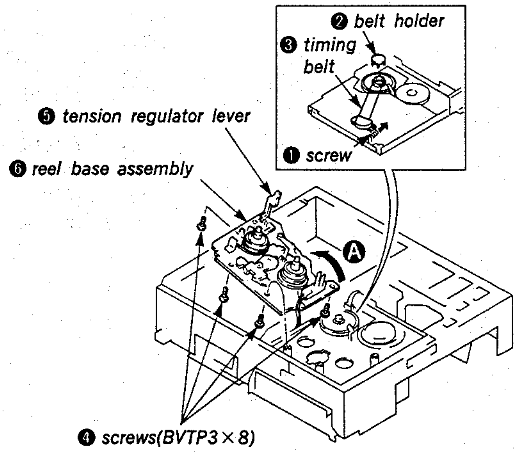
2-3. REMOVAL OF THE POWER BLOCK

1) Remove the connector ❶.
2) Remove two screws ❷, and then, the power block ❸ in the direction of arrow.


❷ screws(BVTP3 × 10)
❸ power block
❶ connector CN001(WHT)10P

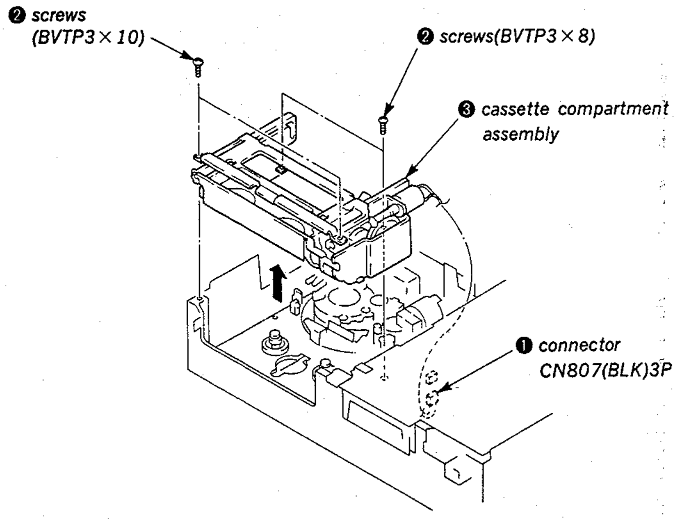
2-4. REMOVAL OF THE REEL BASE ASSEMBLY

1) Loosen the screw ❶.
2) Remove the belt holder ❷, and then, the timing belt ❸.
3) Remove four screws ❹.
4) Open the reel base assembly ❻ in the direction of arrow Ⓐ, seeing to it that the tension regulator lever ❺ is not blocked by the chassis.


❷ belt holder
❸ timing belt
❶ screw
❺ tension regulator lever
❻ reel base assembly
Ⓐ
❹ screws(BVTP3 × 8)

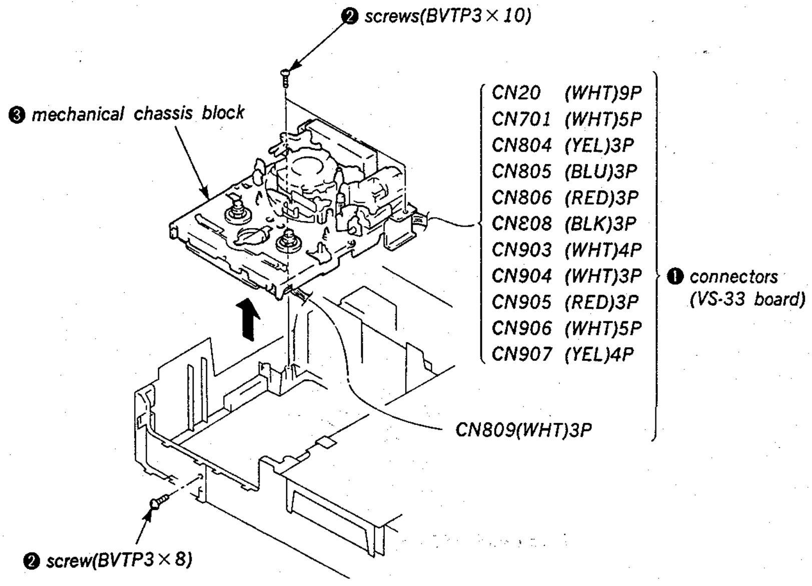
2-5. REMOVAL OF THE CASSETTE COMPARTMENT ASSEMBLY

1) Remove the connector ❶ from the VS-33 board.
2) Remove four screws ❷, and then, the cassette compartment assembly ❸ in the direction of arrow.


❷ screws (BVTP3 × 10)
❷ screws(BVTP3 × 8)
❸ cassette compartment assembly
❶ connector CN807(BLK)3P

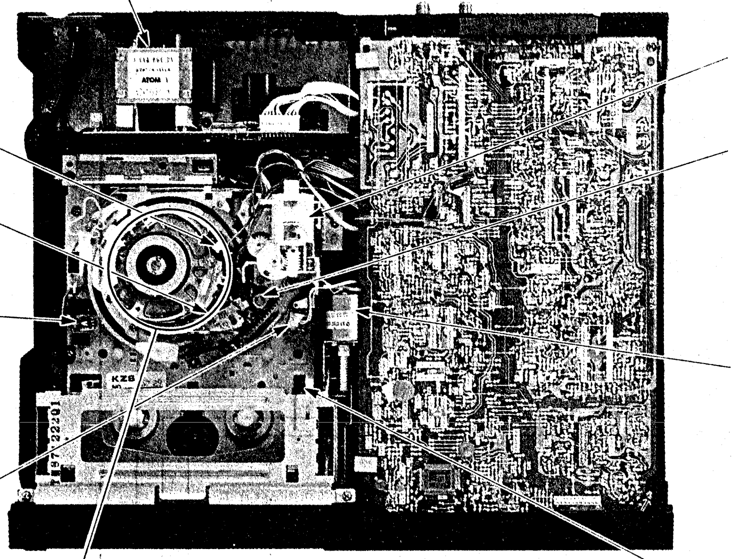
2-6. REMOVAL OF THE MECHANICAL CHASSIS BLOCK

1) Remove twelve connectors ❶ from the VS-33 board.
2) Remove the MF-39 board.
(Refer to paragraph 2-2.)
3) Remove three screws ❷, and then, the mechanical chassis block ❸ in the direction of arrow.


❷ screws(BVTP3 × 10)
❸ mechanical chassis block
CN20 (WHT)9P
CN701 (WHT)5P
CN804 (YEL)3P
CN805 (BLU)3P
CN806 (RED)3P
CN808 (BLK)3P
CN903 (WHT)4P
CN904 (WHT)3P
CN905 (RED)3P
CN906 (WHT)5P
CN907 (YEL)4P
CN809(WHT)3P
❶ connectors (VS-33 board)
❷ screw(BVTP3 × 8)

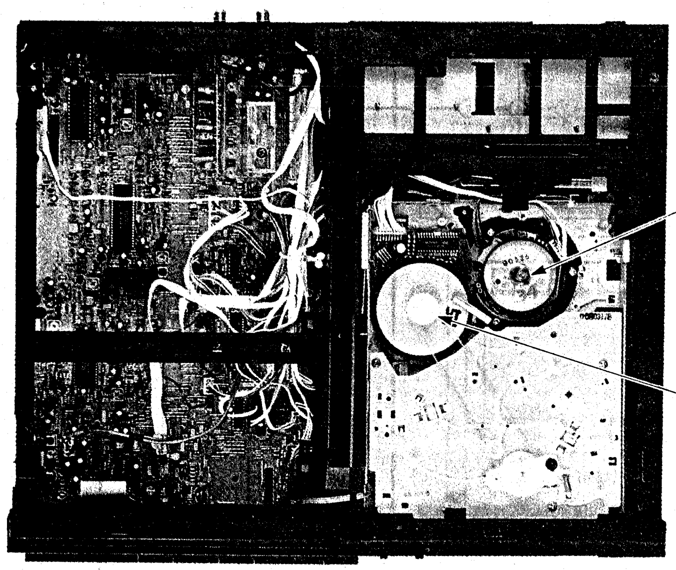
2-7. INTERNAL VIEWS

— Top Side —


T001
power transformer 1-448-866-11 (SL-340/S500)
1-448-923-11 (SL-S505)
Full erase head
8-825-508-61
ACE ass'y
A-6761-122-A
L901
S coil sensor
1-464-781-11
L902
T coil sensor
X-3716-014-1
M903
Cam motor
1-541-309-11
M902
Capstan motor
8-835-334-01
M904
Loading motor
X-3716-074-1
S901
Cassette in/down
REC proof switch
1-571-023-11

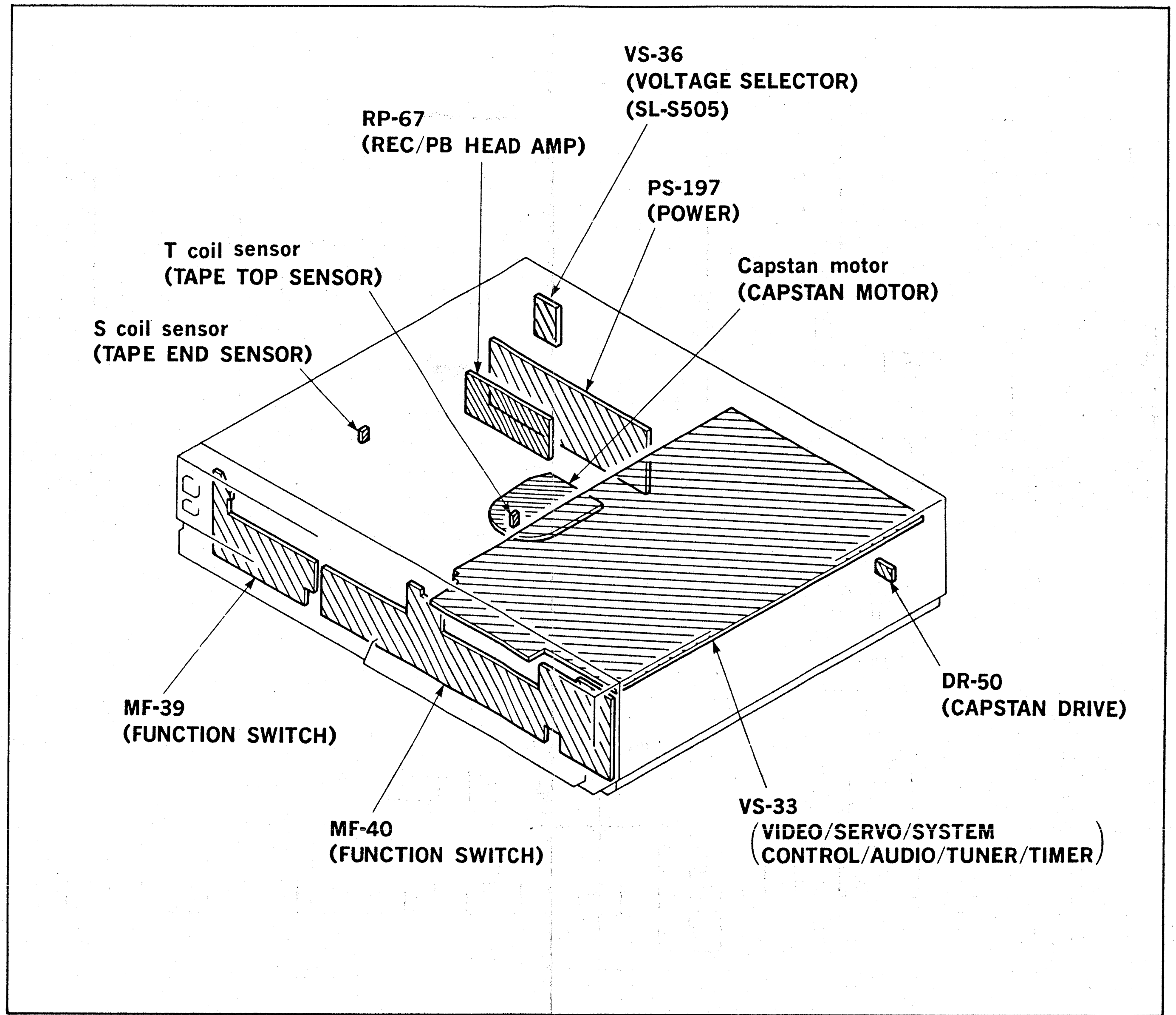
Drum ass'y	A-6050-588-A (SL-340)
	A-6050-583-A (SL-S500/S505)
Disk ass'y	A-6762-383-A (SL-340)
	A-6762-378-A (SL-S500/S505)

— Bottom Side —

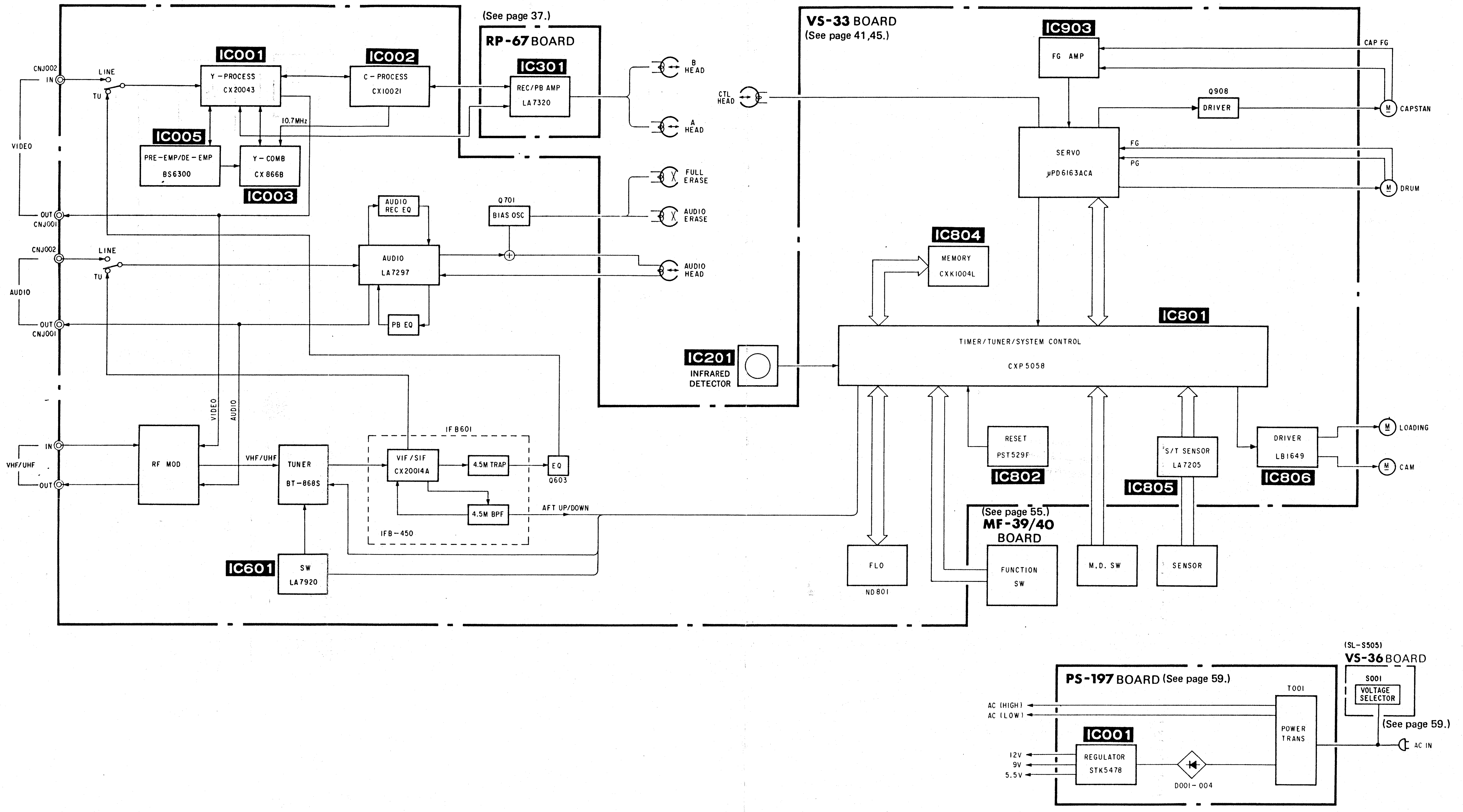

M901
Drum motor
1-541-615-11
M902
Capstan motor
8-835-334-01

SECTION 3
DIAGRAMS

3-1. CIRCUIT BOARDS LOCATION

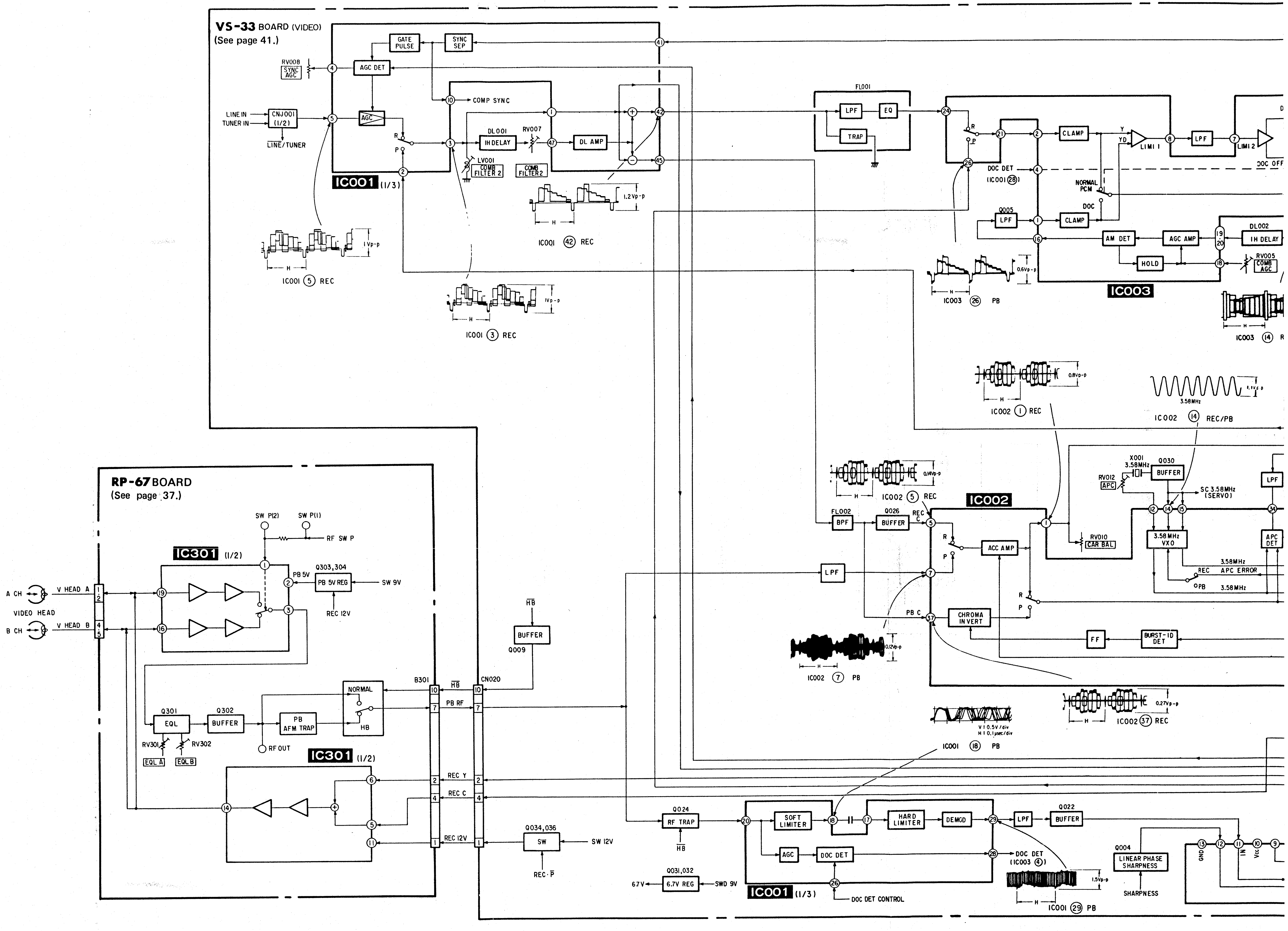

VS-36
(VOLTAGE SELECTOR)
(SL-S505)
RP-67
(REC/PB HEAD AMP)
PS-197
(POWER)
T coil sensor
(TAPE TOP SENSOR)
Capstan motor
(CAPSTAN MOTOR)
S coil sensor
(TAPE END SENSOR)
MF-39
(FUNCTION SWITCH)
DR-50
(CAPSTAN DRIVE)
MF-40
(FUNCTION SWITCH)
VS-33
(VIDEO/SERVO/SYSTEM CONTROL/AUDIO/TUNER/TIMER)

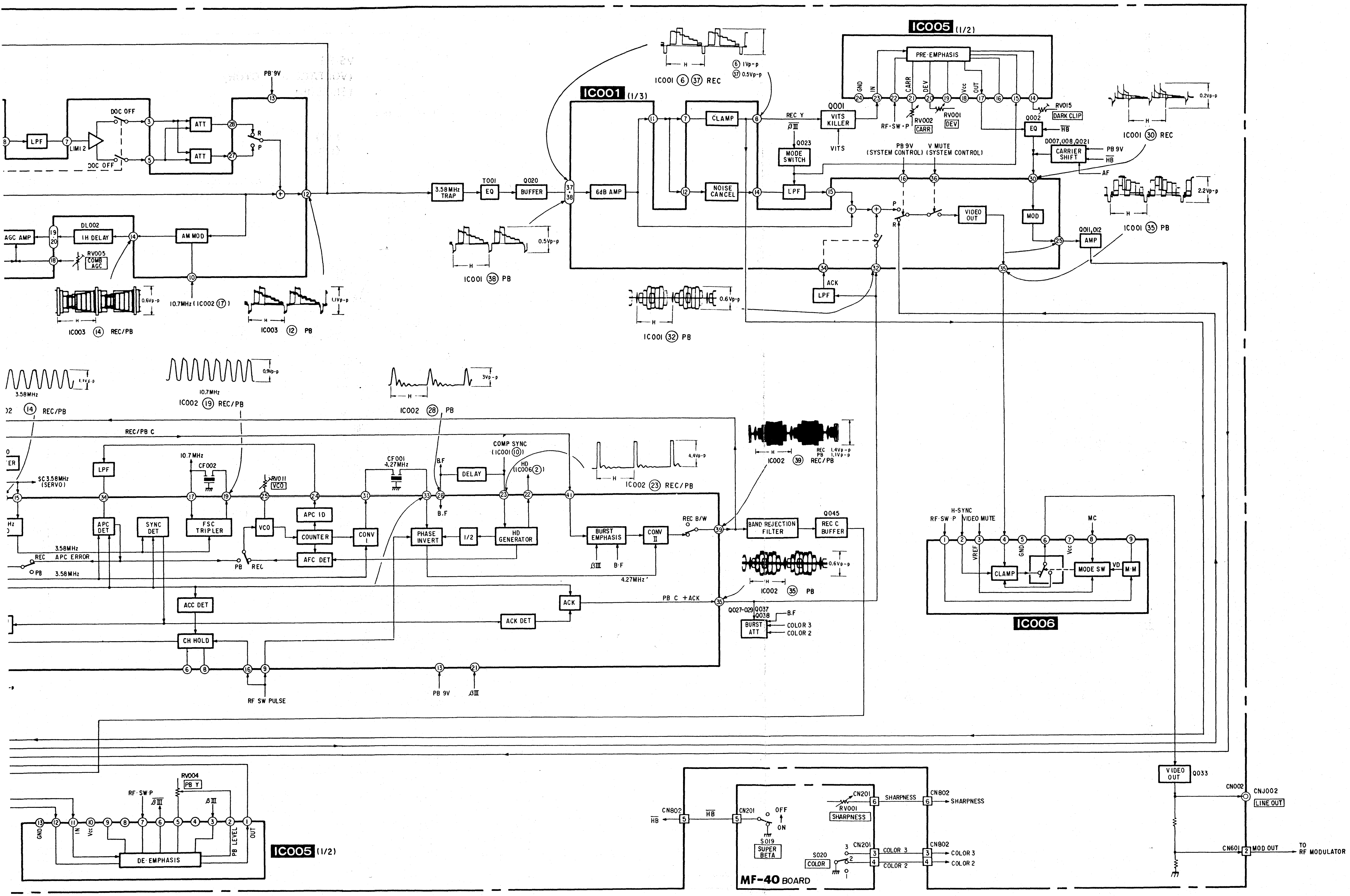
3-2. OVERALL BLOCK DIAGRAM



(See page 37.)
RP-67 BOARD
IC301
REC/PB AMP
LA7320
IC001
Y-PROCESS
CX20043
IC002
C-PROCESS
CX10021
IC005
PRE-EMP/DE-EMP
BS6300
Y-COMB
CX866B
IC003
10.7MHz
CNJ002
IN
LINE
TU
VIDEO
OUT
CNJ001
AUDIO REC EQ
AUDIO
LA7297
PB EQ
Q701
BIAS OSC
B HEAD
A HEAD
FULL ERASE
AUDIO ERASE
AUDIO HEAD
CTL HEAD
AUDIO
VHF/UHF
RF MOD
VHF/UHF
TUNER
BT-868S
IFB601
VIF/SIF
CX20014A
4.5M TRAP
4.5M BPF
EQ
Q603
IFB-450
AFT UP/DOWN
IC601
SW
LA7920
IC201
INFRARED DETECTOR
VS-33 BOARD
(See page 41,45.)
IC903
FG AMP
CAP FG
Q908
DRIVER
CAPSTAN
SERVO
μPD6163ACA
FG
PG
DRUM
IC804
MEMORY
CXK1004L
IC801
TIMER/TUNER/SYSTEM CONTROL
CXP5058
RESET
PST529F
IC802
S/T SENSOR
LA7205
IC805
DRIVER
LB1649
IC806
LOADING
CAM
(See page 55.)
MF-39/40 BOARD
FLO
ND801
FUNCTION SW
M.D. SW
SENSOR
(SL-S505)
VS-36 BOARD
S001
VOLTAGE SELECTOR
(See page 59.)
AC IN
PS-197 BOARD (See page 59.)
T001
POWER TRANS
AC (HIGH)
AC (LOW)
IC001
REGULATOR
STK5478
12V
9V
5.5V
D001-004
M

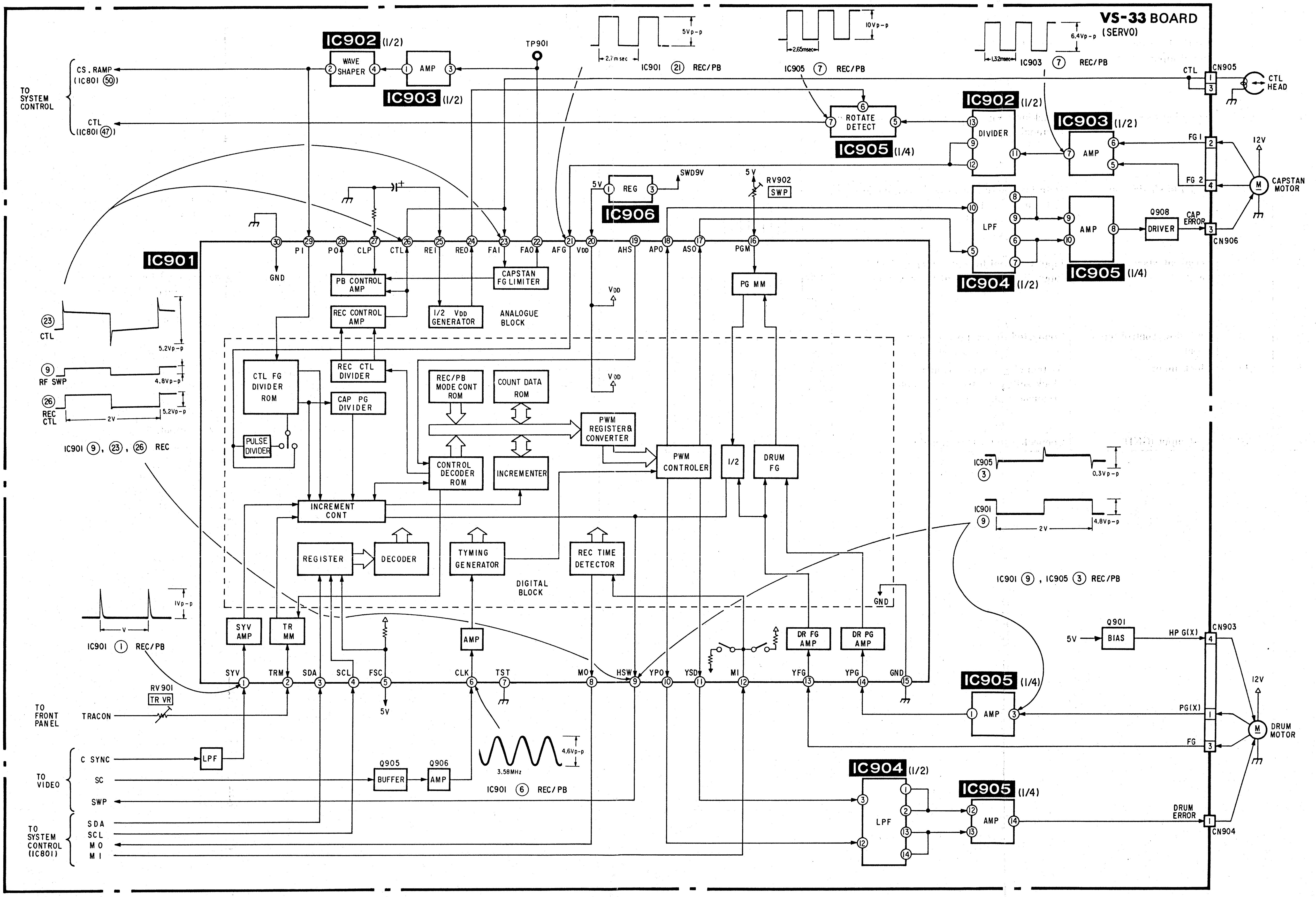
3-3. VIDEO BLOCK DIAGRAM


VS-33 BOARD (VIDEO)
(See page 41.)
RV008 SYNC AGC
GATE PULSE
SYNC SEP
AGC DET
AGC
LINE IN
TUNER IN
CNJ001 (1/2)
LINE/TUNER
COMP SYNC
DL001 1H DELAY
RV007
DL AMP
LV001 COMB FILTER 2
COMB FILTER2
IC001 (1/3)
IC001 ⑤ REC
IC001 ③ REC
IC001 ㊷ REC
1Vp-p
1.2Vp-p
FL001
LPF
EQ
TRAP
CLAMP
LIMI 1
LIMI 2
DOC OFF
DOC DET (IC001 ㉘)
NORMAL PCM
DOC
Q005 LPF
AM DET
AGC AMP
DL002 1H DELAY
HOLD
RV005 COMB AGC
IC003
IC003 ㉖ PB
0.6Vp-p
IC003 ⑭
IC002 ① REC
0.8Vp-p
3.58MHz
IC002 ⑭ REC/PB
IC002 ⑤ REC
0.14Vp-p
FL002 BPF
Q026 BUFFER
IC002
ACC AMP
RV010 CAR BAL
X001 3.58MHz
Q030 BUFFER
RV012 APC
SC 3.58MHz (SERVO)
3.58MHz VXO
APC DET
3.58MHz APC ERROR
REC
PB
3.58MHz
LPF
PB C
CHROMA INVERT
FF
BURST-ID DET
IC002 ⑦ PB
0.2Vp-p
IC002 ㊲ REC
0.27Vp-p
V: 0.5V/div H: 0.1μsec/div
IC001 ⑱ PB
RP-67 BOARD
(See page 37.)
SW P(2)
SW P(1)
RF SW P
IC301 (1/2)
Q303,304
PB 5V
PB 5V REG
SW 9V
REC 12V
A CH
V HEAD A
VIDEO HEAD
B CH
V HEAD B
Q301 EQL
Q302 BUFFER
PB AFM TRAP
NORMAL
HB
RV301
RV302
EQL A
EQL B
RF OUT
IC301 (1/2)
B301
CN020
HB
PB RF
REC Y
REC C
REC 12V
BUFFER Q009
Q034,036 SW
SW 12V
REC·P
Q024 RF TRAP
HB
Q031,032 6.7V REG
6.7V
SWD 9V
SOFT LIMITER
HARD LIMITER
DEMOD
AGC
DOC DET
IC001 (1/3)
DOC DET CONTROL
LPF
Q022 BUFFER
DOC DET (IC003 ④)
1.5Vp-p
IC001 ㉙ PB
Q004 LINEAR PHASE SHARPNESS
SHARPNESS
GND
IN
Vcc

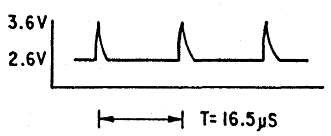
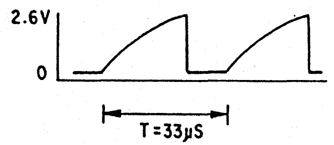
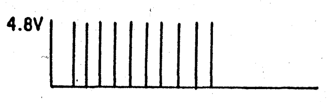
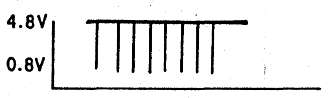
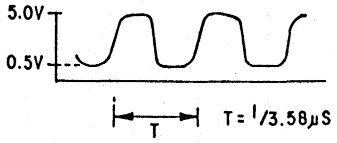
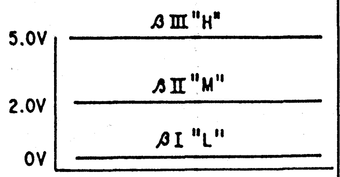
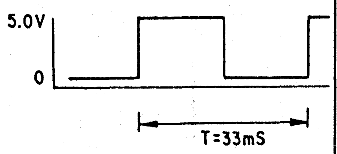
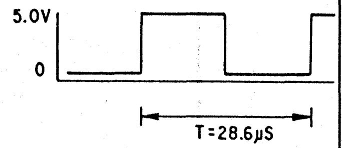
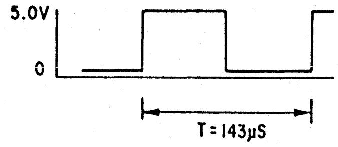

IC001 (1/3)
IC005 (1/2)
IC006
IC003 14 REC/PB
IC003 12 PB
IC001 6 37 REC
6 1Vp-p
37 0.5Vp-p
IC001 30 REC
0.2Vp-p
IC001 35 PB
2.2Vp-p
IC001 38 PB
0.5Vp-p
IC001 32 PB
0.6Vp-p
1.1Vp-p
0.6Vp-p
LPF
LIM 12
DOC OFF
ATT
PB 9V
R
P
AGC AMP
DL002
1H DELAY
RV005
COMB AGC
AM MOD
10.7MHz (IC002 17)
3.58MHz TRAP
T001
EQ
Q020
BUFFER
6dB AMP
CLAMP
NOISE CANCEL
REC Y
Q023
MODE SWITCH
LPF
Q001
VITS KILLER
VITS
RF·SW·P
RV002
CARR
RV001
DEV
PRE-EMPHASIS
GND
IN
CARR
DEV
Vcc
OUT
RV015
DARK CLIP
Q002
EQ
HB
D007,008,Q021
CARRIER SHIFT
PB 9V
AF
PB 9V (SYSTEM CONTROL)
V MUTE (SYSTEM CONTROL)
VIDEO OUT
MOD
Q011,012
AMP
ACK
3.58MHz
IC002 14 REC/PB
10.7MHz
IC002 19 REC/PB
0.9Vp-p
IC002 28 PB
3Vp-p
IC002 23 REC/PB
4.4Vp-p
IC002 39 REC/PB
REC 1.4Vp-p
PB 1.1Vp-p
IC002 35 PB
0.6Vp-p
REC/PB C
SC 3.58MHz (SERVO)
APC DET
SYNC DET
10.7MHz
CF002
FSC TRIPLER
RV011
VCO
APC ID
COUNTER
AFC DET
CF001 4.27MHz
CONV I
B.F
DELAY
COMP SYNC (IC001 10)
HD (IC006 2)
PHASE INVERT
1/2
HD GENERATOR
BURST EMPHASIS
CONV II
4.27MHz
REC B/W
BAND REJECTION FILTER
Q045
REC C BUFFER
3.58MHz
REC
APC ERROR
PB
ACC DET
ACK DET
CH HOLD
PB C +ACK
Q027-029
Q037
Q038
BURST ATT
B.F
COLOR 3
COLOR 2
RF SW PULSE
PB 9V
H-SYNC
RF·SW·P
VIDEO MUTE
MC
VREF
GND
Vcc
CLAMP
MODE SW
VD
M·M
RV004
PB Y
RF·SW·P
PB LEVEL
DE-EMPHASIS
CN802
HB
CN201
OFF
ON
S019
SUPER BETA
RV001
SHARPNESS
SHARPNESS
S020
COLOR
COLOR 3
COLOR 2
MF-40 BOARD
VIDEO OUT
Q033
CN002
CNJ002
LINE OUT
CN601
MOD OUT
TO RF MODULATOR

3-4. SERVO BLOCK DIAGRAM

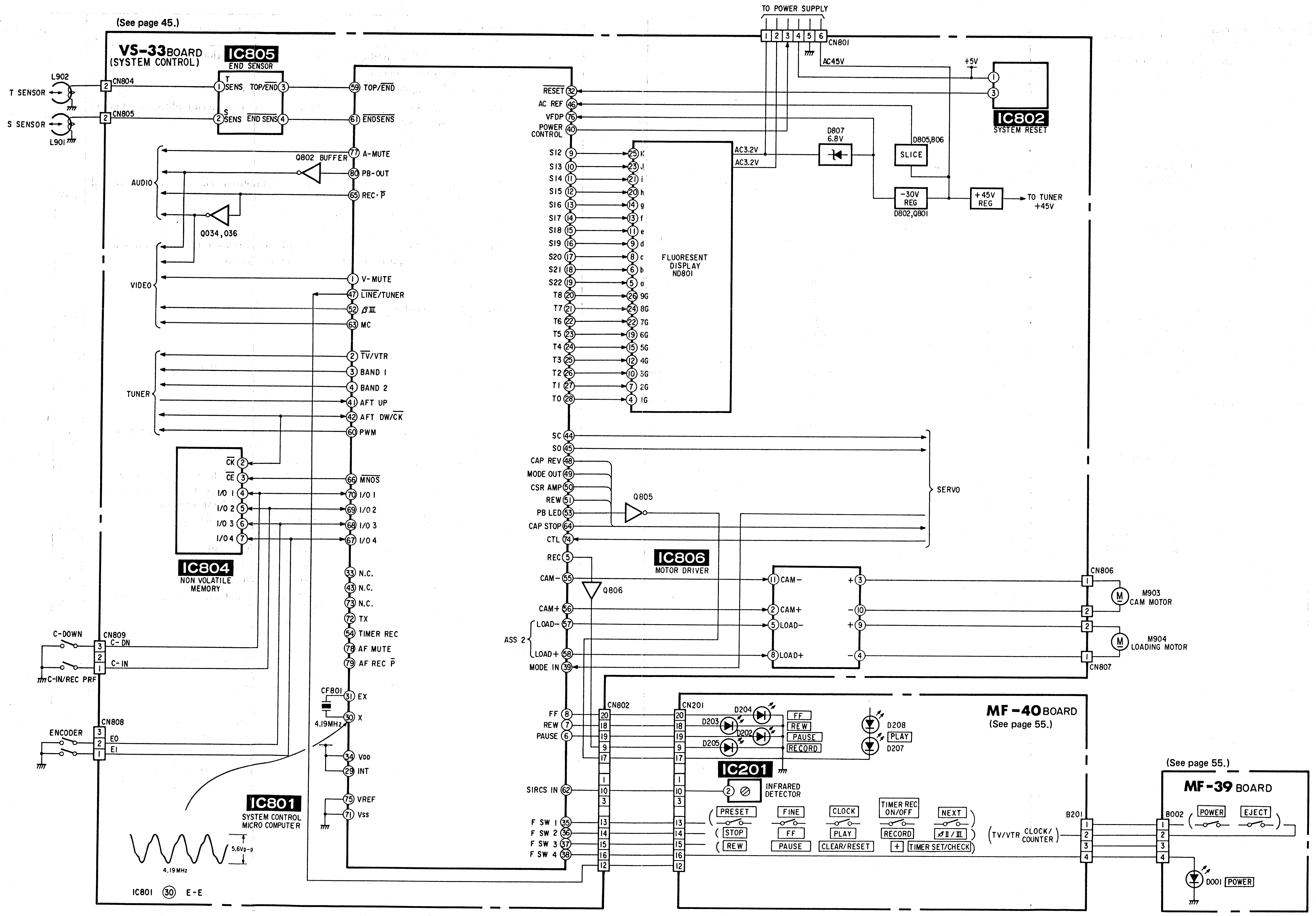
(See page 45.)


VS-33 BOARD
(SERVO)
TO SYSTEM CONTROL
CS. RAMP (IC801 ㊿)
CTL (IC801 ㊼)
IC902 (1/2)
WAVE SHAPER
AMP
IC903 (1/2)
TP901
5Vp-p
2.7msec
IC901 ㉑ REC/PB
10Vp-p
2.65msec
IC905 ⑦ REC/PB
6.4Vp-p
1.32msec
IC903 ⑦ REC/PB
CTL
CN905
CTL HEAD
ROTATE DETECT
IC905 (1/4)
IC902 (1/2)
DIVIDER
IC903 (1/2)
AMP
FG1
FG2
12V
CAPSTAN MOTOR
REG
IC906
SWD9V
5V
RV902
SWP
LPF
IC904 (1/2)
AMP
IC905 (1/4)
Q908
DRIVER
CAP ERROR
CN906
IC901
GND
PI
PO
CLP
CTL
REI
REO
FAI
FAO
AFG
VDD
AHS
APO
ASO
PGM
PB CONTROL AMP
REC CONTROL AMP
1/2 VDD GENERATOR
CAPSTAN FG LIMITER
ANALOGUE BLOCK
PG MM
㉓ CTL
5.2Vp-p
⑨ RF SWP
4.8Vp-p
㉖ REC CTL
2V
5.2Vp-p
IC901 ⑨, ㉓, ㉖ REC
CTL FG DIVIDER ROM
REC CTL DIVIDER
CAP PG DIVIDER
PULSE DIVIDER
REC/PB MODE CONT ROM
COUNT DATA ROM
PWM REGISTER& CONVERTER
CONTROL DECODER ROM
INCREMENTER
PWM CONTROLER
1/2
DRUM FG
INCREMENT CONT
REGISTER
DECODER
TYMING GENERATOR
REC TIME DETECTOR
DIGITAL BLOCK
IC905 ③
0.3Vp-p
IC901 ⑨
4.8Vp-p
2V
IC901 ⑨, IC905 ③ REC/PB
1Vp-p
V
IC901 ① REC/PB
SYV AMP
TR MM
AMP
DR FG AMP
DR PG AMP
GND
Q901
BIAS
HP G(X)
CN903
SYV
TRM
SDA
SCL
FSC
CLK
TST
MO
HSW
YPO
YSD
MI
YFG
YPG
GND
RV901
TR VR
TO FRONT PANEL
TRACON
5V
IC905 (1/4)
AMP
PG(X)
FG
DRUM MOTOR
12V
TO VIDEO
C SYNC
SC
SWP
LPF
Q905
BUFFER
Q906
AMP
4.6Vp-p
3.58MHz
IC901 ⑥ REC/PB
IC904 (1/2)
LPF
IC905 (1/4)
AMP
DRUM ERROR
CN904
TO SYSTEM CONTROL (IC801)
SDA
SCL
MO
MI

3-5. IC901 Digital Servo IC terminal

Terminal No.	Terminal symbol	Terminal name	Function and operation	Signal waveform
1	SYV	Vertical synchronous signal input	Vertical synchronous signal input terminal. Frequency 60Hz	
2	TRM	Tracking mono-multi	Tracking mono-multi time constant setting terminal.	
3	SDA	Serial mode data input	Data input terminal in operating mode. Data are stored by synchronizing with the clock of SCL terminal.	
4	SCL	Serial interface clock input	Input terminal for data storing clock. Input data are stored at the beginning.	
5	FSC	Fine slow control input (VDD)	Connected to VDD power supply.	DC5.0V
6	CLK	Clock input	System clock input terminal. Clock subcarrier frequency input. Frequency : 3.579545 MHz.	
7	TST	Test input (GND)	Connected to GND terminal.	
8	MO	Recording time mode Detection output (β I, β II, β III)	When recording at detection output terminal in recording time mode, output is generated according to MI terminal input logic. When PB mode. Tape recording mode is automatically detected and output.	 βI MO<0.5V β II 1.7≦MO≦2.4V β III MO≧4.0V
9	HSW	Head switch pulse output	Head switch signal output terminal consisting of Drum PG, FG and PG mono-multi. Frequency 30Hz	
10	YPO	Drum phase Control system Error output (PWM)	PWM conversion output terminal for drum motor revolving phase error. Standard when recording. • Vertical synchronous signal input (SYV terminal) • Internal standard cycle (When FM audio in used). Standard when PB mode. • Internal standard frequency (FSC is counted). The above standard dignal and HSW signal are compared in the phase, the error is PWM converted and the signal is output.	
11	YSO	Drum speed Control system Error output (PWM)	PWM conversion output terminal for drum motor revolving speed error. Internal standard signal (fsc is counted) is compared with cycle Y of Y drum FG signal, the error is PWM converted and signal is output.	

3-6. SYSTEM CONTROL BLOCK DIAGRAM


(See page 45.)
VS-33 BOARD (SYSTEM CONTROL)
IC805 END SENSOR
T SENSOR
S SENSOR
L902
L901
CN804
CN805
T SENS TOP/END
S SENS END SENS
TOP/END
ENDSENS
A-MUTE
Q802 BUFFER
PB-OUT
REC·P
AUDIO
Q034,036
VIDEO
V-MUTE
LINE/TUNER
βIII
MC
TUNER
TV/VTR
BAND 1
BAND 2
AFT UP
AFT DW/CK
PWM
CK
CE
I/O 1
I/O 2
I/O 3
I/O 4
MNOS
IC804 NON VOLATILE MEMORY
N.C.
TX
TIMER REC
AF MUTE
AF REC P
C-DOWN
CN809
C-DN
C-IN
C-IN/REC PRF
ENCODER
CN808
EO
EI
CF801
EX
X
4.19MHz
VDD
INT
VREF
VSS
IC801 SYSTEM CONTROL MICRO COMPUTER
5.6Vp-p
4.19MHz
IC801 (30) E-E
RESET
AC REF
VFDP
POWER CONTROL
S12 S13 S14 S15 S16 S17 S18 S19 S20 S21 S22
T8 T7 T6 T5 T4 T3 T2 T1 T0
K J i h g f e d c b a
9G 8G 7G 6G 5G 4G 3G 2G 1G
FLUORESENT DISPLAY ND801
TO POWER SUPPLY
CN801
AC45V
+5V
IC802 SYSTEM RESET
AC3.2V
D807 6.8V
D805,806
SLICE
-30V REG
D802,Q801
+45V REG
TO TUNER +45V
SC
SO
CAP REV
MODE OUT
CSR AMP
REW
PB LED
CAP STOP
CTL
Q805
SERVO
REC
CAM-
CAM+
LOAD-
LOAD+
MODE IN
ASS 2
Q806
IC806 MOTOR DRIVER
CN806
M903 CAM MOTOR
M904 LOADING MOTOR
CN807
FF
REW
PAUSE
CN802
CN201
D204
D203
D202
D205
RECORD
D208
PLAY
D207
MF-40 BOARD
(See page 55.)
IC201
INFRARED DETECTOR
SIRCS IN
F SW 1
F SW 2
F SW 3
F SW 4
PRESET
STOP
FINE
CLOCK
CLEAR/RESET
TIMER REC ON/OFF
NEXT
βII/III
+
TIMER SET/CHECK
TV/VTR CLOCK/COUNTER
B201
MF-39 BOARD
(See page 55.)
B002
POWER
EJECT
D001 POWER

3-7. SYSTEM CONTROL — VIDEO, AUDIO INTERFACE

SIGNAL	I/O	Pin No.	STOP	FF	REW	CUE	REV	PB	PB·P	REC	REC·P
A-MUTE	O	IC801 ⑰Pin	L	L	L	H	H	L	H	L	L
PB-OUT	O	IC801 ⑳Pin	L	L	L	H	H	H	H	L	L
REC·$\overline{\text{P}}$	O	IC801 (65)Pin	L	L	L	L	L	L	L	H	L
V-MUTE	O	IC801 ① Pin	L	L	L	L	L	L	L	L	L
β III	O	IC801 (52)Pin	*1	*1	*1	*2	*2	*2	*2	*1	*1
MC	O	IC801 (63)Pin	L	L	L	H	H	L	H	L	L
$\overline{\text{LINE}}$/TUNER	I	IC801 ㊼Pin	*3	*3	*3	*3	*3	*3	*3	*3	*3

*1 : By the β II/β III selector.
*2 : Be caused by β mode of playback.
*3 : "L" when pin jack in Video IN.

3-8. SYSTEM CONTROL — SERVO INTERFACE

SIGNAL	I/O	Pin No.	STOP	FF	REW	CUE	REV	PB	PB·P	REC	REC·P
CAP-REV	O	IC801 ㊽Pin	L	L	H	L	H	L	L	L	L
MODEOUT	O	IC801 ㊾Pin	*3	*3	*3	*4	*4	*4	*4	*6	*5
CAP STOP	O	IC801 (64)Pin	H	L	L	L	L	L	H	L	H
CS-RAMP	I	IC801 ㊿Pin	L	H	H	H	H	H	L	H	L
REW	O	IC801 (51)Pin	L	L	L	L	L	L	L	L	L
PB LED	O	IC801 (53)Pin	L	L	L	H	H	H	H	L	L
CTL	I	IC801 (74)Pin	L/H	*1	*1	*1	*1	*1	L/H	*1	L/H
ASS2 (LOAD−)	O	IC801 (57)Pin	L	L	L	L	L	L	L	L	L

⋆ Open-collector output

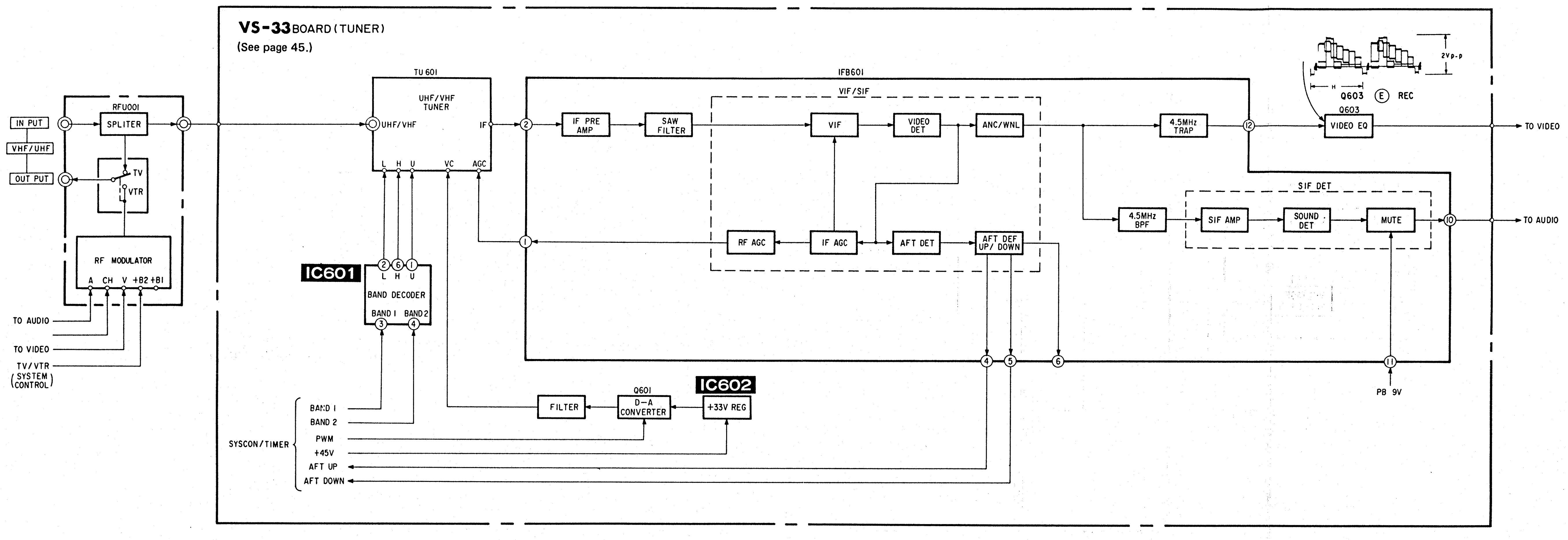
*1. When there is CTL : ⎍⎍
When there is no CTL : "L" or "H"
*2. "L" when is β II, other "H" .
*3. 2.5V in DC.
*4. Be caused by β mode of playback.
(βIs : 0V in DC.
β II : 2.5V in DC.
β III : 4.8V in DC.
*5. By the β II/III selector.
*6. Be caused by β mode of record.

3-9. SYSTEM CONTROL — TUNER BLOCK INTERFACE

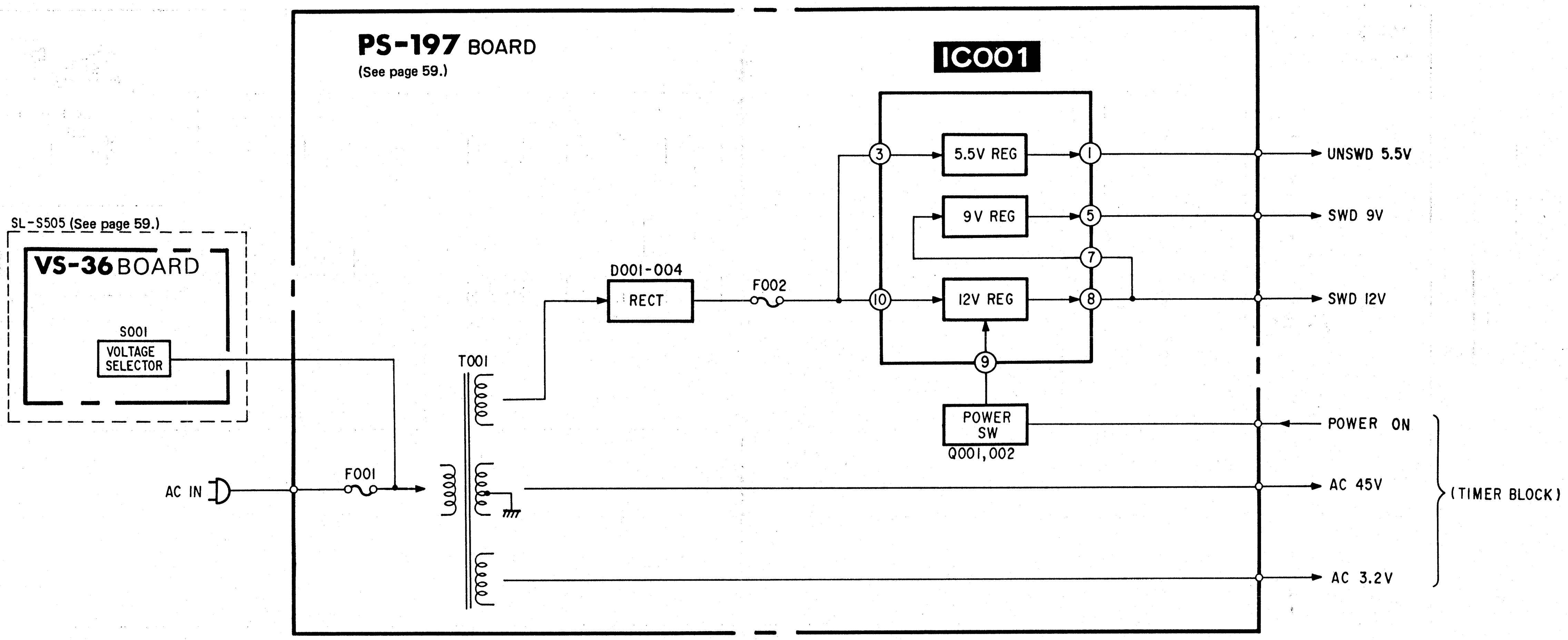
SIGNAL	I/O	Pin No.	V_L	V_H	U	
$\overline{\text{TV}}$-VTR	O	IC801 ② Pin	L/H	L/H	L/H	By the $\overline{\text{TV}}$/VTR switch
BAND1	O	IC801 ③ Pin	H	L	H	
BAND2	O	IC801 ④ Pin	H	L	L	
AFT-UP	I	IC801 ㊶Pin	L	L	L	
AFT-DN	I	IC801 ㊷Pin	L	L	L	
PWM	O	IC801 (60)Pin	⎍⎍⎍	⎍⎍⎍	⎍⎍⎍	
$\overline{\text{MNOS}}$	O	IC801 (66)Pin	*1	*1	*1	
I/O1	I/O	IC801 (70)Pin	*2	*2	*2	
I/O2	I/O	IC801 (69)Pin	*3	*3	*3	
I/O3	I/O	IC801 (68)Pin	*4	*4	*4	
I/O4	I/O	IC801 (67)Pin	*5	*5	*5	
$\overline{\text{CLK}}$	O	IC801 ㊷Pin	*6	*6	*6	

*1 : "L" in time of MNOS Read/write mode only.
*2 : MNOS Data in time of Read/write mode only, the others C-DN.
*3 : MNOS Data in time of Read/write mode only, the others C-ON.
*4 : MNOS Data in time of Read/write mode only, the others E-0.
*5 : MNOS Data in time of Read/write mode only, the others E-1.
*6 : MNOS CLOCK OUT PUT in time of Read/write mode only, the others AFT-DN IN PUT.

3-12. TUNER BLOCK DIAGRAM


VS-33 BOARD (TUNER)
(See page 45.)
IN PUT
VHF/UHF
OUT PUT
RFU001
SPLITER
TV
VTR
RF MODULATOR
A CH V +B2 +B1
TO AUDIO
TO VIDEO
TV/VTR
(SYSTEM CONTROL)
TU601
UHF/VHF TUNER
UHF/VHF
IF
L H U VC AGC
IC601
L H U
BAND DECODER
BAND 1 BAND 2
IFB601
VIF/SIF
IF PRE AMP
SAW FILTER
VIF
VIDEO DET
ANC/WNL
RF AGC
IF AGC
AFT DET
AFT DEF UP/DOWN
4.5MHz TRAP
4.5MHz BPF
SIF DET
SIF AMP
SOUND DET
MUTE
Q603
VIDEO EQ
Q603 E REC
2Vp-p
H
TO VIDEO
TO AUDIO
PB 9V
SYSCON/TIMER
BAND 1
BAND 2
PWM
+45V
AFT UP
AFT DOWN
FILTER
Q601
D-A CONVERTER
IC602
+33V REG

3-13. POWER BLOCK DIAGRAM


PS-197 BOARD
(See page 59.)
IC001
SL-S505 (See page 59.)
VS-36 BOARD
S001
VOLTAGE SELECTOR
AC IN
F001
T001
D001-004
RECT
F002
5.5V REG
9V REG
12V REG
POWER SW
Q001, 002
3
10
1
5
7
8
9
UNSWD 5.5V
SWD 9V
SWD 12V
POWER ON
AC 45V
AC 3.2V
(TIMER BLOCK)

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM

NOTE

THIS NOTES IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this,the necessary notes note is printed in each block.)

• For printed wiring boards.

- ○— : indicates a lead wire mounted on the component side.
- ▨ : conductor side.

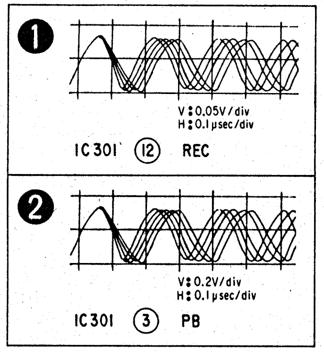
• For schematic diagram

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
- Chip resistor are 1/10W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : nonflammable resistor.
- ▭ : fusible resistor.
- ☐ : panel designation.
- △ : internal component.
- ☐ : adjustment for repair.
- ━━ : B + Line
- ━ ━ ━ : B − Line.
- ⇨ : IN/OUT direction of (+, −) B line.
- ※ : selected to yield optimum performance.
- Circled numbers refer to waveforms.
- Voltages are dc between ground and measurement points.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

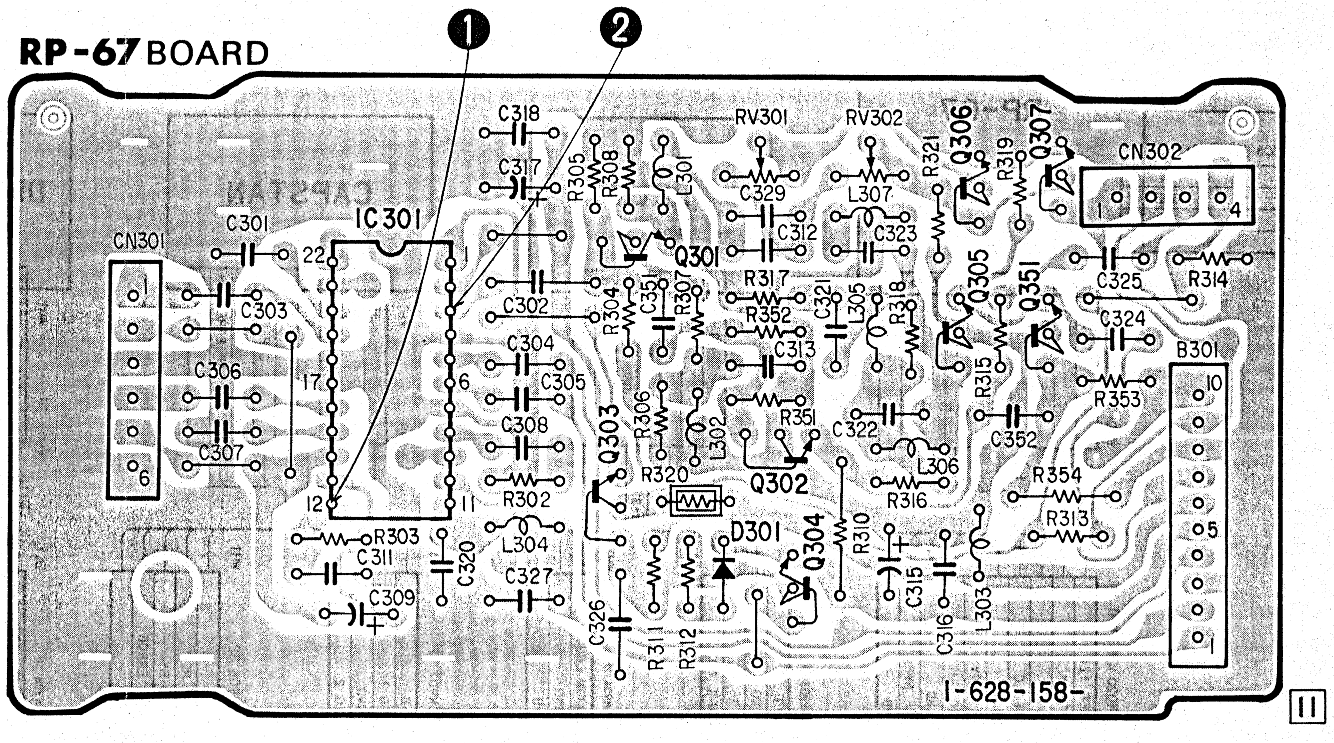
When indicating parts by reference number, please include the board name.

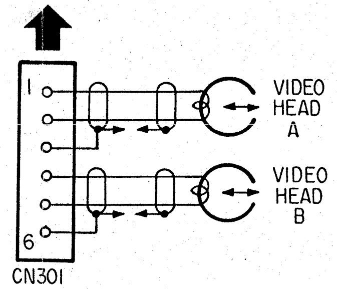
RP-67 BOARD



RP-67 (REC/PB HEAD AMP) PRINTED WIRING BOARD

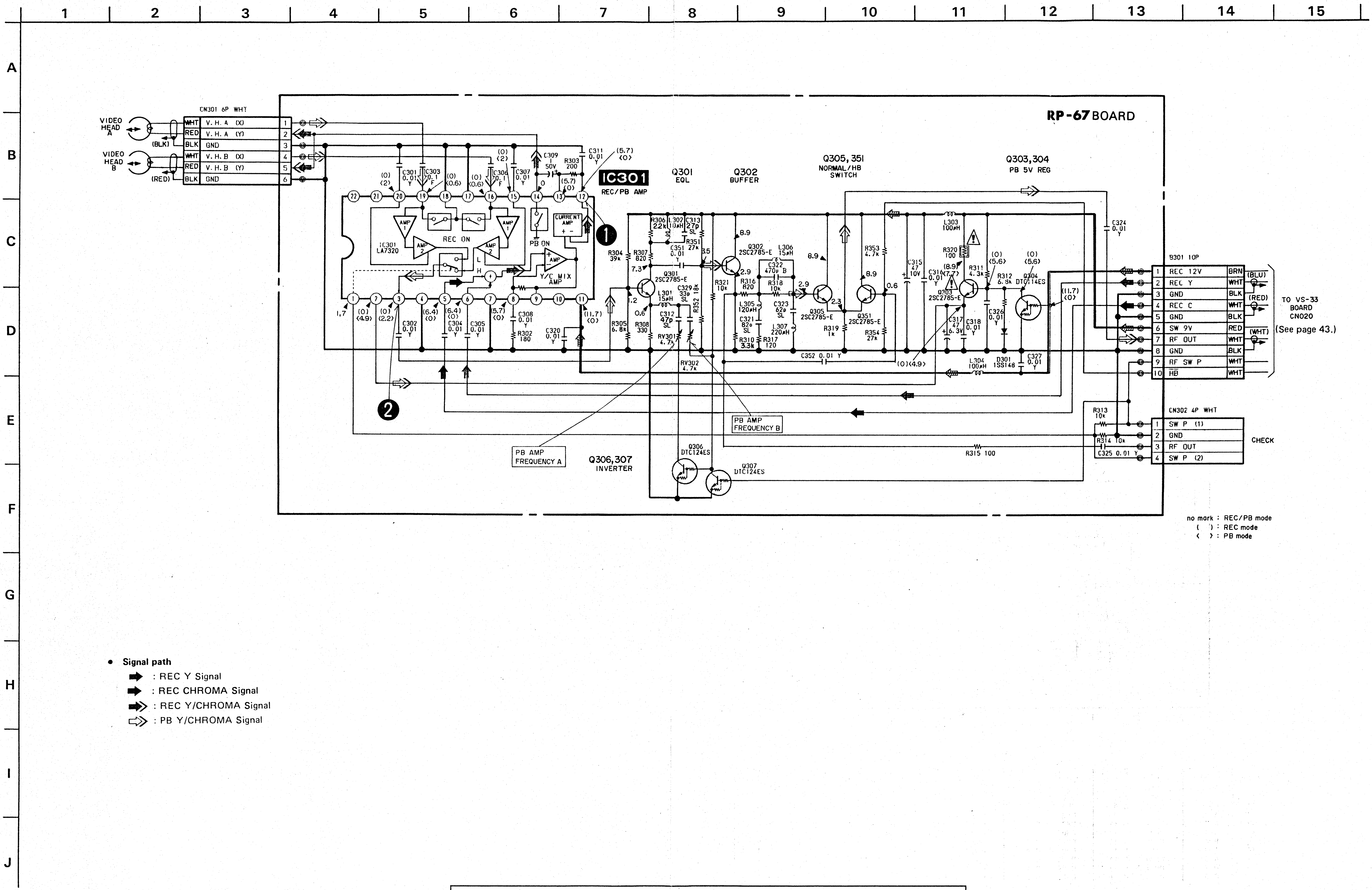
—Ref. No. RP-67 BOARD: 1,000 series—


RP-67 BOARD
❶
❷
IC301
CN301
CN302
B301
RV301
RV302
C301
C302
C303
C304
C305
C306
C307
C308
C309
C311
C312
C313
C315
C316
C317
C318
C320
C321
C322
C323
C324
C325
C326
C327
C329
C351
C352
R302
R303
R304
R305
R306
R307
R308
R310
R311
R312
R313
R314
R315
R316
R317
R318
R319
R320
R321
R351
R352
R353
R354
L301
L302
L303
L304
L305
L306
L307
Q301
Q302
Q303
Q304
Q305
Q306
Q307
Q351
D301
1-628-158-
11


1
6
CN301
VIDEO HEAD A
VIDEO HEAD B

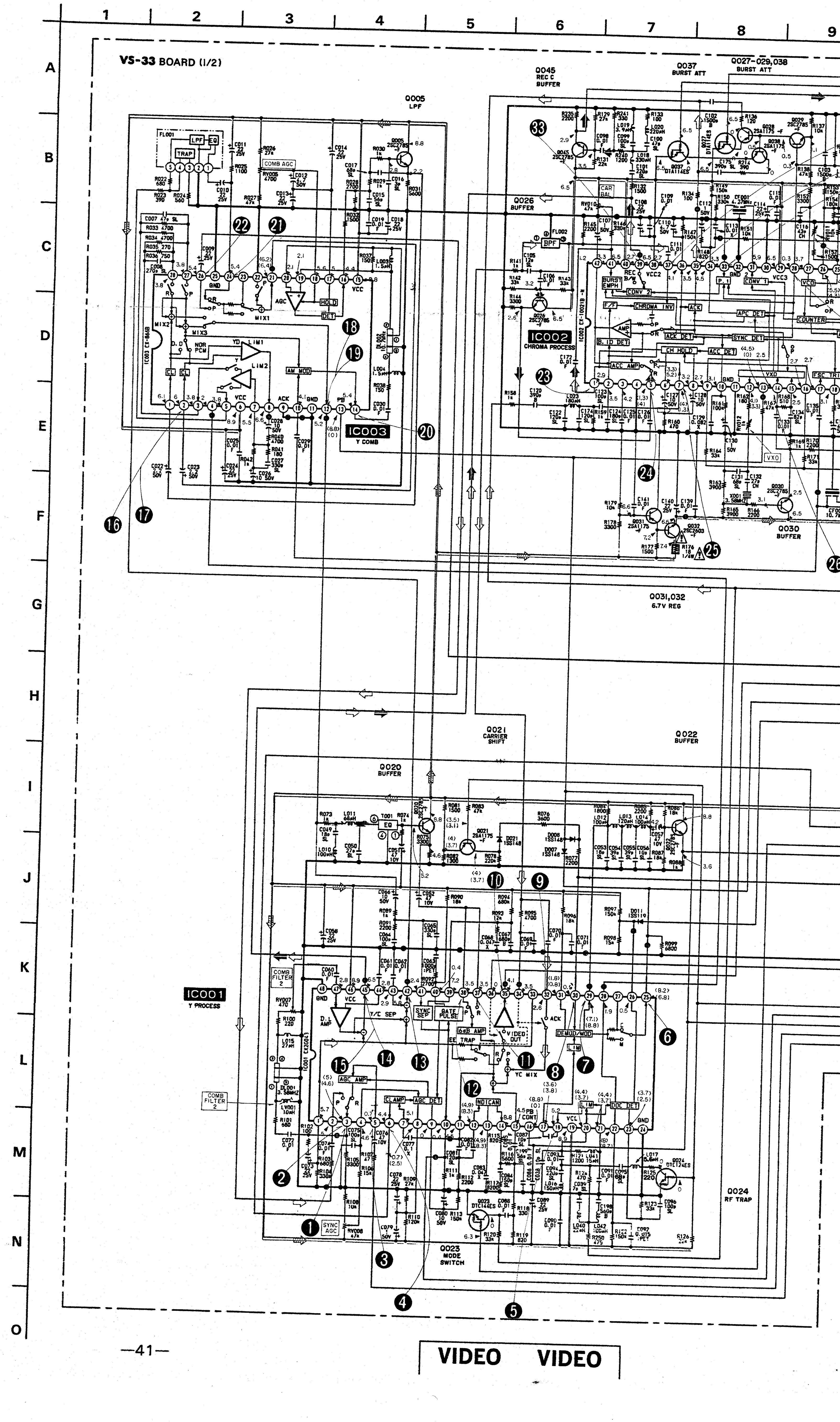
RP-67 (REC/PB HEAD AMP) SCHEMATIC DIAGRAM

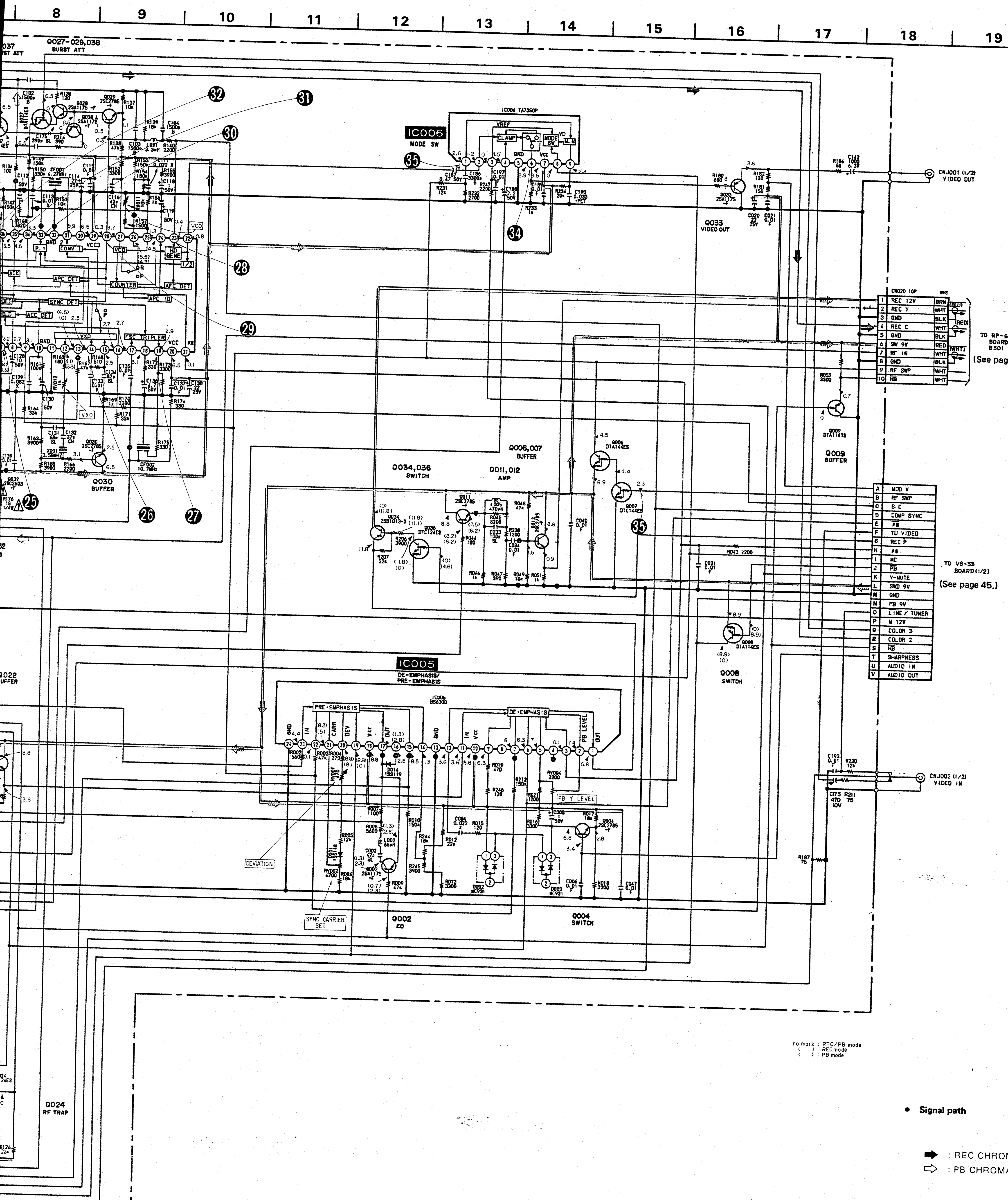
—Ref. No. RP-67 BOARD: 1,000 series—


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
RP-67 BOARD
VIDEO HEAD A
VIDEO HEAD B
(BLK)
(RED)
CN301 6P WHT
WHT V.H.A (X)
RED V.H.A (Y)
BLK GND
WHT V.H.B (X)
RED V.H.B (Y)
BLK GND
IC301
REC/PB AMP
IC301 LA7320
REC ON
PB ON
CURRENT AMP
Y/C MIX AMP
Q301 EQL
Q302 BUFFER
Q305, 351 NORMAL/HB SWITCH
Q303, 304 PB 5V REG
Q306, 307 INVERTER
Q301 2SC2785-E
Q302 2SC2785-E
Q305 2SC2785-E
Q351 2SC2785-E
Q303 2SC2785-E
Q304 DTC114ES
Q306 DTC124ES
Q307 DTC124ES
D301 1SS148
PB AMP FREQUENCY A
PB AMP FREQUENCY B
RV301 4.7k
RV302 4.7k
S301 10P
REC 12V
REC Y
GND
REC C
GND
SW 9V
RF OUT
GND
RF SW P
HB
BRN
WHT
BLK
RED
(BLU)
(RED)
(WHT)
TO VS-33 BOARD CN020
(See page 43.)
CN302 4P WHT
SW P (1)
GND
RF OUT
SW P (2)
CHECK
R313 10k
R314 10k
C325 0.01 Y
R315 100
no mark : REC/PB mode
( ) : REC mode
〈 〉 : PB mode
• Signal path
: REC Y Signal
: REC CHROMA Signal
: REC Y/CHROMA Signal
: PB Y/CHROMA Signal

VS-33 (VIDEO PROCESS) SCHEMATIC DIAGRAM

—Ref. No. VS-33 BOARD: 2,000 series—


VS-33 BOARD (1/2)
Q005 LPF
Q045 REC C BUFFER
Q037 BURST ATT
Q027-029,038 BURST ATT
Q026 BUFFER
IC003 CX-866B
IC003 Y COMB
IC002 CX-10021B -N
IC002 CHROMA PROCESS
Q030 BUFFER
Q031,032 6.7V REG
Q021 CARRIER SHIFT
Q022 BUFFER
Q020 BUFFER
IC001 CX20043
IC001 Y PROCESS
COMB FILTER 2
COMB AGC
SYNC AGC
Q023 MODE SWITCH
Q024 RF TRAP
1 2 3 4 5 6 7 8 9
A B C D E F G H I J K L M N O

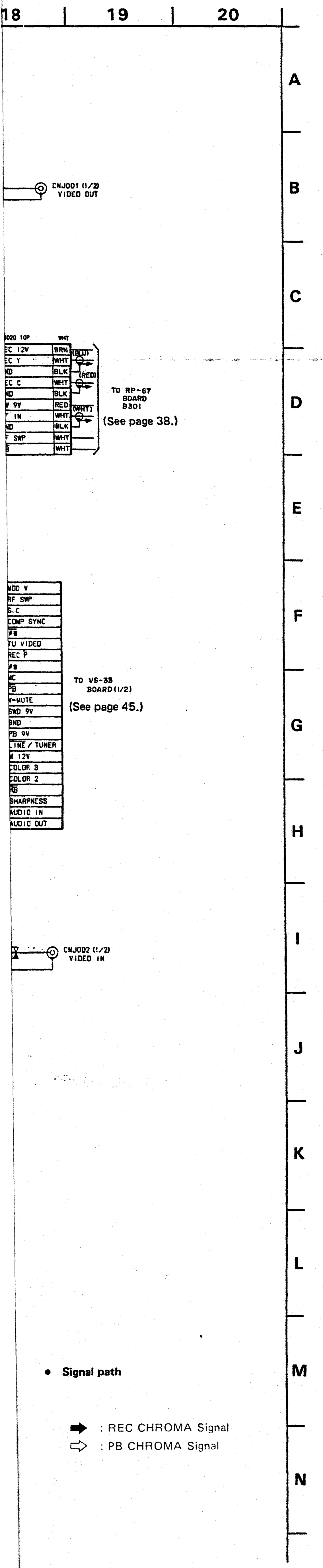

8
9
10
11
12
13
14
15
16
17
18
19
Q027-029,038
BURST ATT
Q030
BUFFER
Q022
BUFFER
Q024
RF TRAP
IC006
MODE SW
IC006 TA7350P
VREF
CLAMP
MODE SW
M.M
GND
VCC
Q033
VIDEO OUT
CNJ001 (1/2)
VIDEO OUT
CNJ002 (1/2)
VIDEO IN
CN020 10P
1 REC 12V BRN
2 REC Y WHT
3 GND BLK
4 REC C WHT
5 GND BLK
6 SW 9V RED
7 RF IN WHT
8 GND BLK
9 RF SWP WHT
10 HB WHT
TO RP-6
BOARD
B301
(See pag
Q009
BUFFER
Q006,007
BUFFER
Q011,012
AMP
Q034,036
SWITCH
A MOD V
B RF SWP
C S.C
D COMP SYNC
E PB
F TU VIDEO
G REC P
H PB
I MC
J PB
K V-MUTE
L SWD 9V
M GND
N PB 9V
O LINE / TUNER
P M 12V
Q COLOR 3
R COLOR 2
S HB
T SHARPNESS
U AUDIO IN
V AUDIO OUT
TO VS-33
BOARD(1/2)
(See page 45.)
Q008
SWITCH
IC005
DE-EMPHASIS/
PRE-EMPHASIS
IC005 BS6300
PRE-EMPHASIS
DE-EMPHASIS
GND
IN
CARR
DEV
Vcc
OUT
PB LEVEL
PB Y LEVEL
DEVIATION
SYNC CARRIER SET
Q002
EQ
Q004
SWITCH
APC DET
SYNC DET
ACC DET
AFC DET
APC ID
COUNTER
CONV 1
VCO
HD GENE
1/2
FSC TRIPLER
VXO
P.I
ACK
VCC3
25
26
27
28
29
30
31
32
34
35

no mark : REC/PB mode
( ) : REC mode
< > : PB mode

• **Signal path**

➡ : REC CHRO

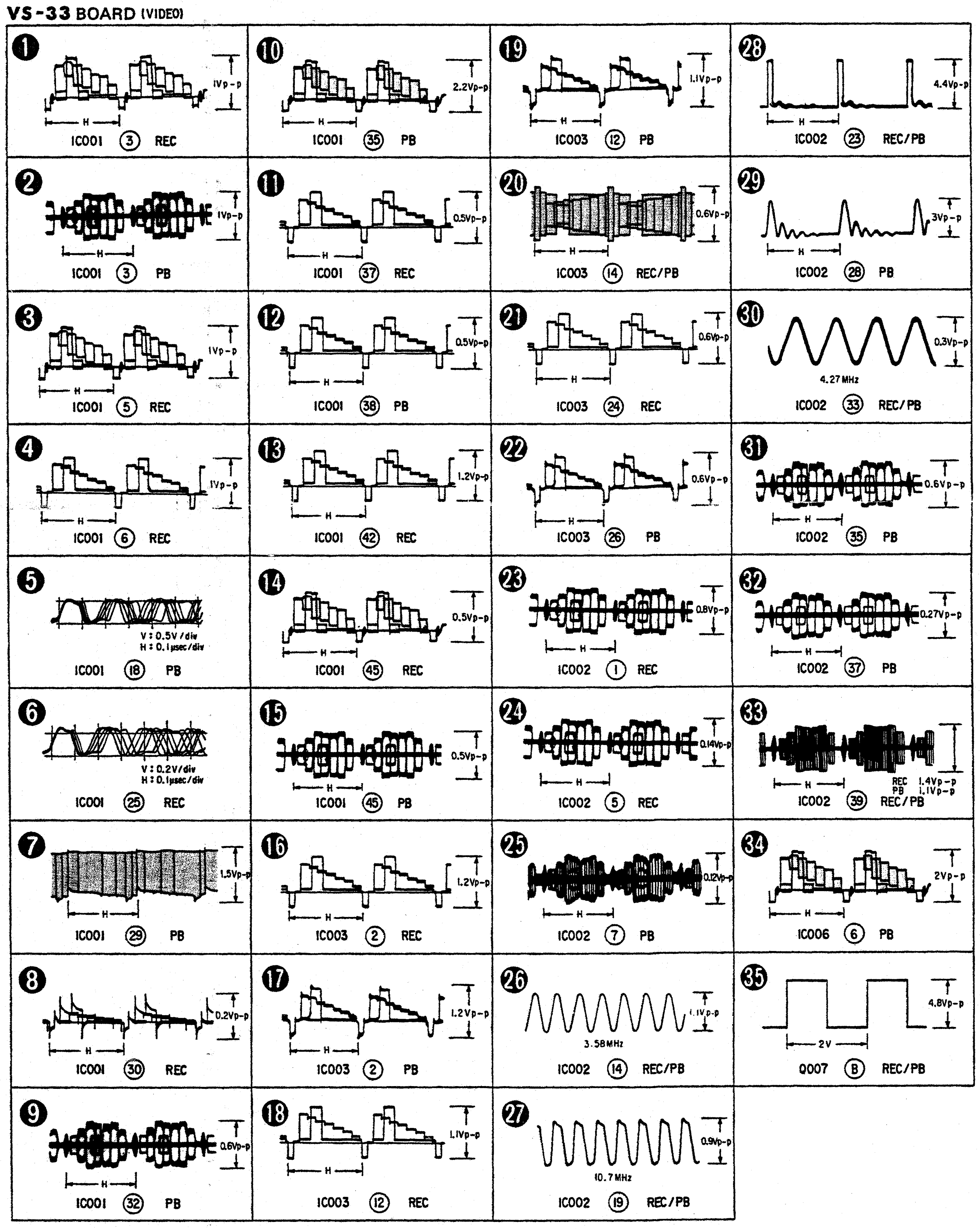
⇨ : PB CHROM


18
19
20
A
B
C
D
E
F
G
H
I
J
K
L
M
N
CNJ001 (1/2) VIDEO OUT
020 10P
WHT
EC 12V
EC Y
ND
EC C
ND
W 9V
T IN
ND
F SWP
B
BRN
WHT
BLK
WHT
BLK
RED
WHT
BLK
WHT
WHT
(BLU)
(RED)
(WHT)
TO RP-67 BOARD B301
(See page 38.)
MOD V
RF SWP
S.C
COMP SYNC
ϕB
TU VIDEO
REC P̄
ϕB
MC
P̄B
V-MUTE
SWD 9V
GND
PB 9V
LINE / TUNER
M 12V
COLOR 3
COLOR 2
HB
SHARPNESS
AUDIO IN
AUDIO OUT
TO VS-33 BOARD(1/2)
(See page 45.)
CNJ002 (1/2) VIDEO IN

- **Signal path**

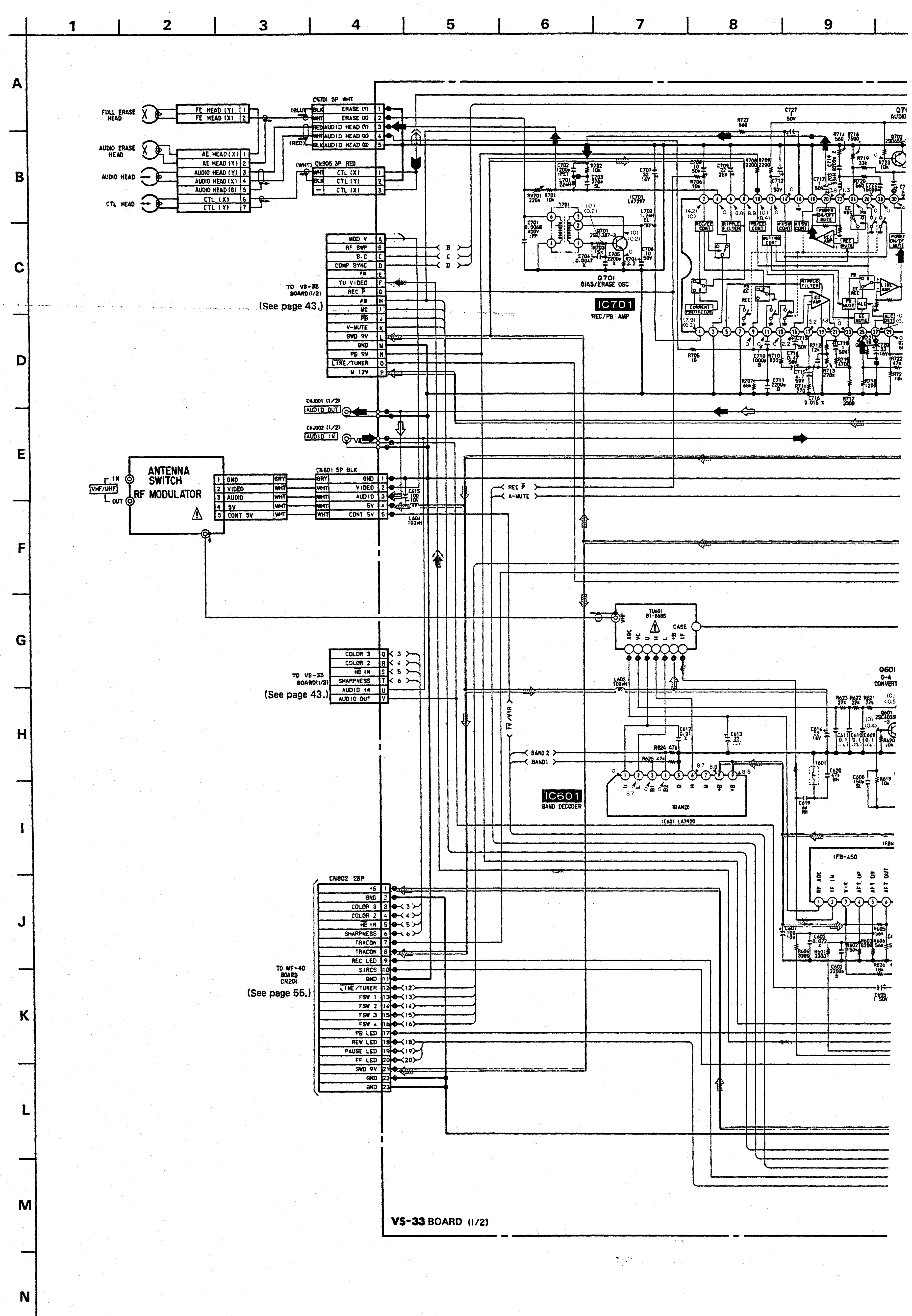
➡ : REC CHROMA Signal
⇨ : PB CHROMA Signal

VS-33 BOARD (VIDEO)



VS-33 (SERVO, SYSTEM CONTROL, AUDIO, TUNER, TIMER), DR-50 (CAPSTAN DRIVE), TJ-4, GM-8 (CAPSTAN REVIEW) SCHEMATIC DIAG

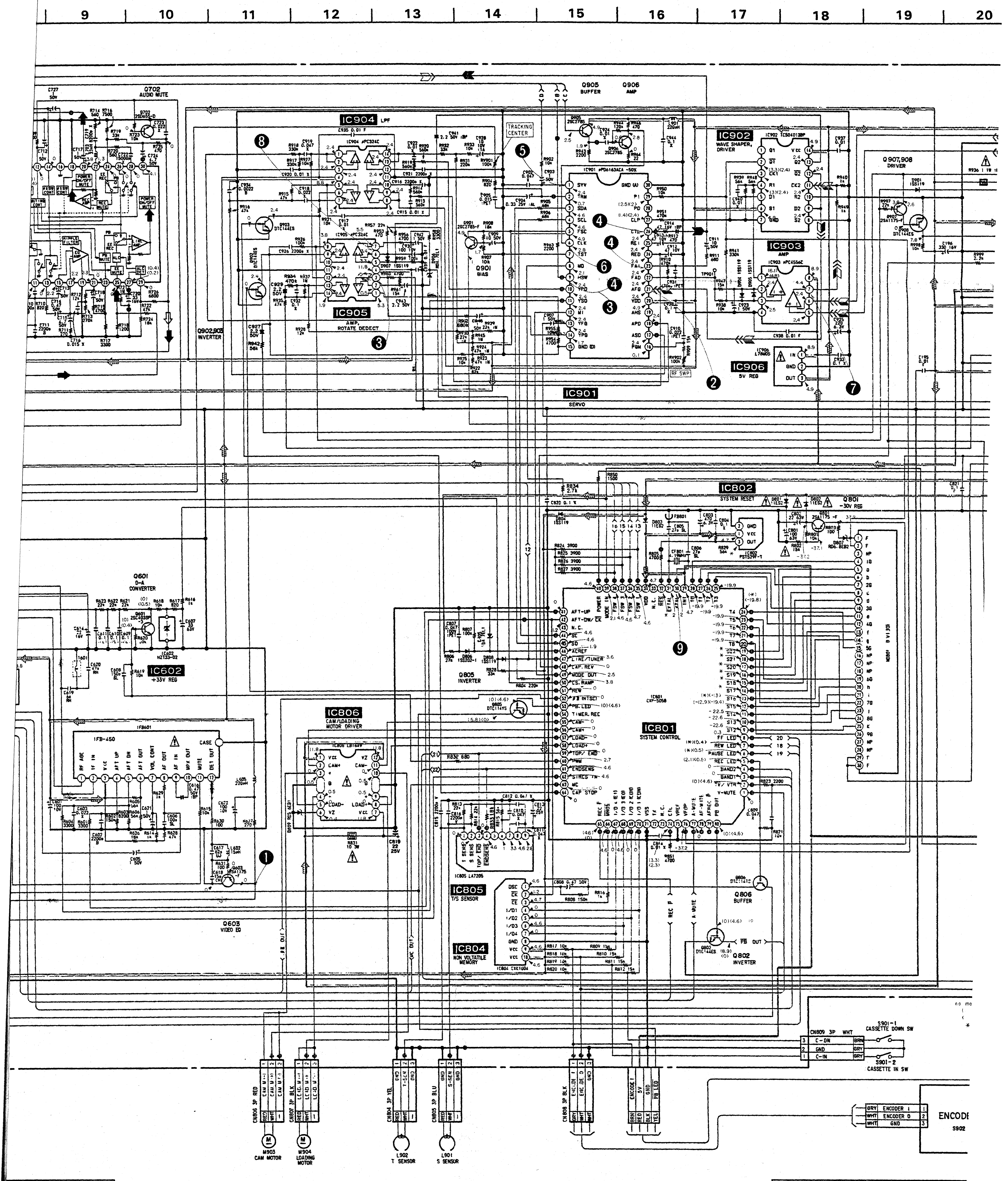
—Ref. No. VS-33, DR-50, TJ-4and GM-8 BOARD: 2,000 series—


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
G
H
I
J
K
L
M
N
FULL ERASE HEAD
AUDIO ERASE HEAD
AUDIO HEAD
CTL HEAD
FE HEAD (Y)
FE HEAD (X)
AE HEAD (X)
AE HEAD (Y)
AUDIO HEAD (Y)
AUDIO HEAD (X)
AUDIO HEAD (G)
CTL (X)
CTL (Y)
CN701 5P WHT
ERASE (Y)
ERASE (X)
AUDIO HEAD (Y)
AUDIO HEAD (X)
AUDIO HEAD (G)
CN905 3P RED
TO VS-33 BOARD(1/2)
(See page 43.)
MOD V
RF SWP
S.C
COMP SYNC
TU VIDEO
REC P
MC
PB
V-MUTE
SWD 9V
GND
PB 9V
LINE/TUNER
M 12V
CNJ001 (1/2)
AUDIO OUT
CNJ002 (1/2)
AUDIO IN
VHF/UHF
IN
OUT
ANTENNA SWITCH
RF MODULATOR
GND
VIDEO
AUDIO
5V
CONT 5V
CN601 5P BLK
REC P
A-MUTE
Q701
BIAS/ERASE OSC
IC701
REC/PB AMP
IC701 LA7297
TU601 BT-868S
CASE
COLOR 3
COLOR 2
HB IN
SHARPNESS
AUDIO IN
AUDIO OUT
TV/VTR
BAND 2
BAND1
IC601
BAND DECODER
IC601 LA7920
Q601
D-A CONVERT
IFB-450
RF AGC
IF IN
VCC
AFT UP
AFT DN
AFT OUT
CN802 23P
+5
TRACON
REC LED
SIRCS
FSW 1
FSW 2
FSW 3
FSW 4
PB LED
REW LED
PAUSE LED
FF LED
TO MF-40 BOARD CN201
(See page 55.)
VS-33 BOARD (1/2)

SERVO, SYSTEM CONTROL,

SERVO, SYSTEM CONTROL, AUDIO. TUNER, TIMER

IEW) SCHEMATIC DIAGRAM


9
10
11
12
13
14
15
16
17
18
19
20
Q702 AUDIO MUTE
IC904 LPF
TRACKING CENTER
Q905 BUFFER
Q906 AMP
IC902 WAVE SHAPER, DRIVER
Q907,908 DRIVER
IC905 AMP, ROTATE DEDECT
Q902,903 INVERTER
Q901 BIAS
IC901 SERVO
IC903 AMP
IC906 5V REG
RF SWP
IC802 SYSTEM RESET
Q801 -30V REG
Q601 D-A CONVERTER
IC602 +33V REG
Q805 INVERTER
IC801 SYSTEM CONTROL
IC806 CAM/LOADING MOTOR DRIVER
IFB-450
IFB601
IC805 T/S SENSOR
IC804 NON VOLTATILE MEMORY
Q806 BUFFER
Q802 INVERTER
Q603 VIDEO EQ
PB OUT
WC OUT
REC P
A-MUTE
CN809 3P WHT
S901-1 CASSETTE DOWN SW
S901-2 CASSETTE IN SW
CN806 3P RED
CN807 3P BLK
CN804 3P YEL
CN805 3P BLU
CN808 3P BLK
M903 CAM MOTOR
M904 LOADING MOTOR
L902 T SENSOR
L901 S SENSOR
ENCODE
S902
CN801 (A 1V10)

CONTROL,

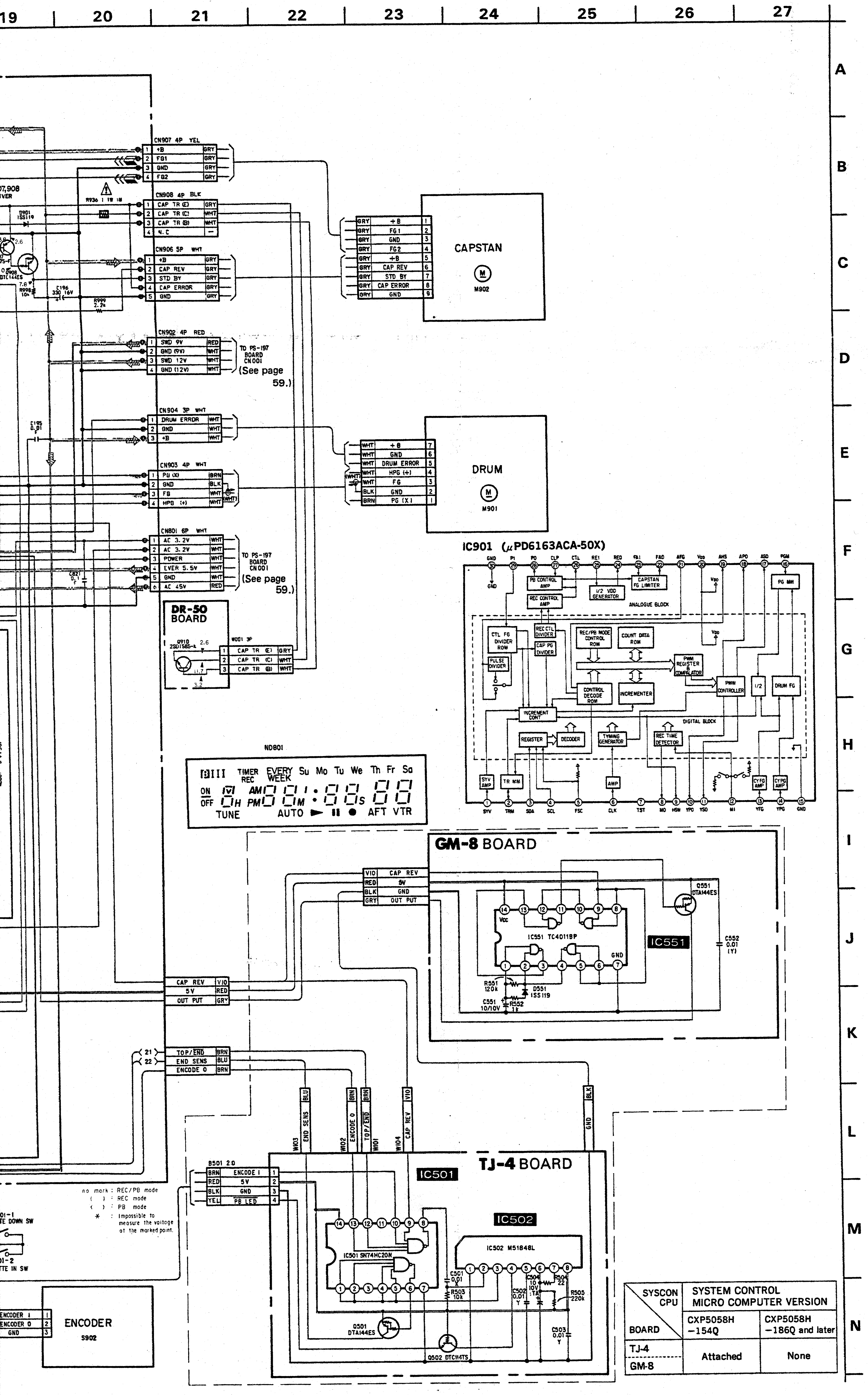
SERVO, SYSTEM (
AUDIO, TUNER, T

Signal path

	REC	REC/PB	PB
Capstan speed servo		⊳	
Capstan phase servo	▶»	⊳»	▷»
Capstan servo (speed and phase)		⊳»»	
Ref. signal	▶	⊳	▷

- **Signal path**

➡ : REC AUDIO Signal
⇨ : PB AUDIO Signal

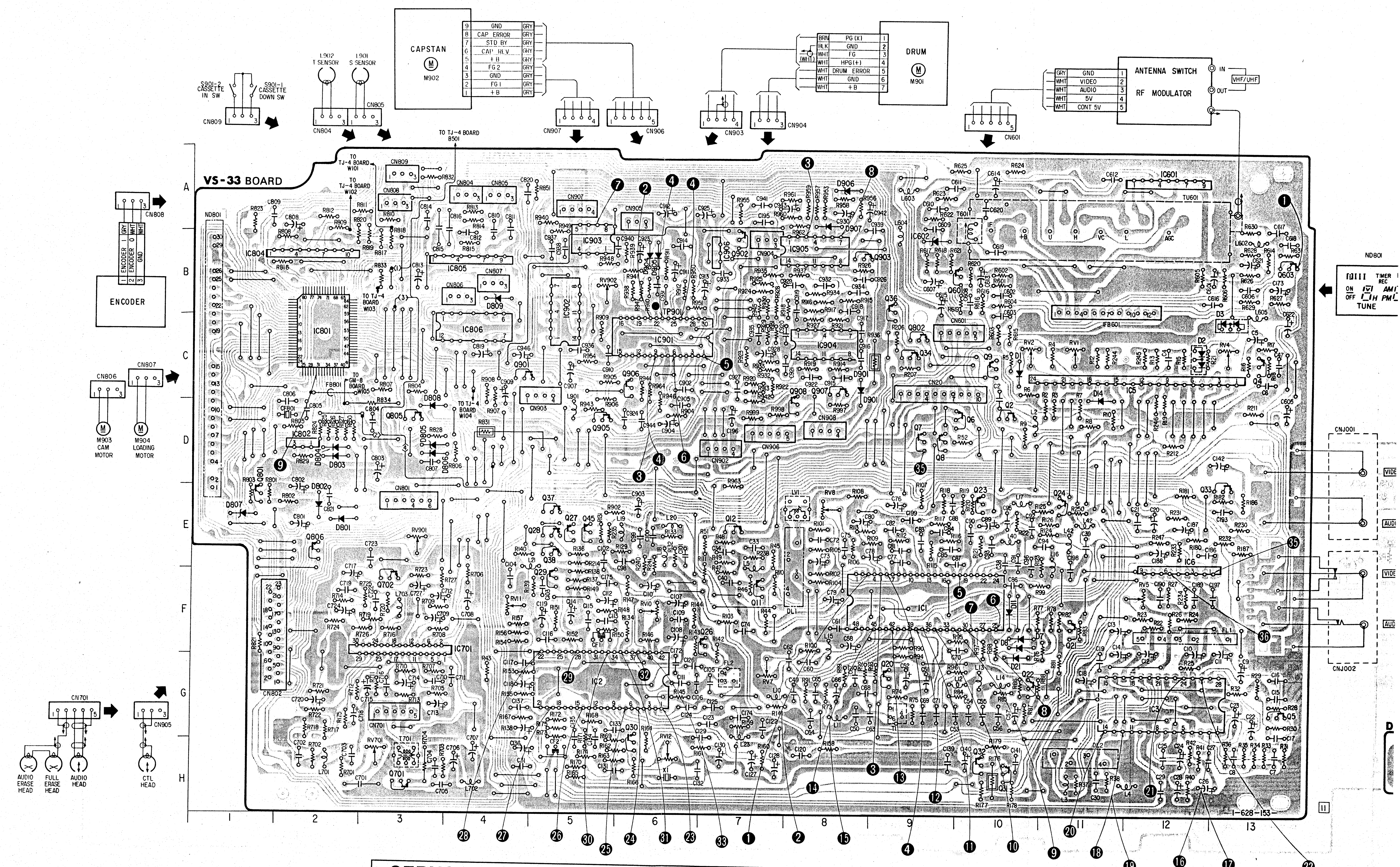

19
20
21
22
23
24
25
26
27
A
B
C
D
E
F
G
H
I
J
K
L
M
N
CN907 4P YEL
+B
FG1
GND
FG2
GRY
07,908
IVER
R936 1 1W
CN908 4P BLK
CAP TR (E)
CAP TR (C)
CAP TR (B)
N.C
D901
1SS119
Q908
DTC144ES
R998 10k
C196 330 16V
R999 2.2k
CN906 5P WHT
+B
CAP REV
STD BY
CAP ERROR
GND
CN902 4P RED
SWD 9V
GND (9V)
SWD 12V
GND (12V)
TO PS-197 BOARD CN001 (See page 59.)
C195 0.01
CN904 3P WHT
DRUM ERROR
GND
+B
CN903 4P WHT
PG (X)
GND
FG
HPG (+)
CN801 6P WHT
AC 3.2V
AC 3.2V
POWER
EVER 5.5V
GND
AC 45V
C821
TO PS-197 BOARD CN001 (See page 59.)
DR-50 BOARD
Q910 2SD1585-k
W001 3P
CAP TR (E)
CAP TR (C)
CAP TR (B)
CAPSTAN
M902
+B
FG1
GND
FG2
+B
CAP REV
STD BY
CAP ERROR
GND
DRUM
M901
+B
GND
DRUM ERROR
HPG (+)
FG
GND
PG (X)
IC901 (μPD6163ACA-50X)
GND
P1
PO
CLP
CTL
RE1
REO
FA1
FAO
AFG
VDD
AHS
APO
ASO
PGM
PB CONTROL AMP
REC CONTROL AMP
1/2 VDD GENERATOR
CAPSTAN FG LIMITER
ANALOGUE BLOCK
PG MM
CTL FG DIVIDER ROM
REC CTL DIVIDER
CAP PG DIVIDER
PULSE DIVIDER
REC/PB MODE CONTROL ROM
COUNT DATA ROM
PWM REGISTER & COMPALATOR
CONTROL DECODE ROM
INCREMENTER
PMW CONTROLLER
1/2
DRUM FG
INCREMENT CONT
DIGITAL BLOCK
REGISTER
DECODER
TYMING GENERATOR
REC TIME DETECTOR
SYV AMP
TR MM
AMP
CYFG AMP
CYPG AMP
SYV
TRM
SDA
SCL
FSC
CLK
TST
MO
HSW
YPO
YSO
MI
YFG
YPG
GND
ND801
TIMER REC
EVERY WEEK
Su Mo Tu We Th Fr Sa
ON
OFF
AM
PM
H
M
S
TUNE
AUTO
AFT VTR
GM-8 BOARD
VIO
RED
BLK
GRY
CAP REV
5V
GND
OUT PUT
Q551 DTA144ES
IC551 TC4011BP
IC551
C552 0.01
R551 120k
D551 1SS119
C551 10/10V
R552 1k
CAP REV
5V
OUT PUT
21
22
TOP/END
END SENS
ENCODE 0
BRN
BLU
W103
END SENS
W102
ENCODE 0
TOP/END
W101
W104
CAP REV
GND
BLK
TJ-4 BOARD
IC501
IC502
B501 20
ENCODE 1
5V
GND
PB LED
YEL
IC501 SN74HC20N
IC502 M51848L
C501 0.01
R503 10k
C502 0.01
C504 10 10V
R504 22
R505 220k
C503 0.01
Q501 DTA144ES
Q502 DTC114TS
01-1
TE DOWN SW
01-2
TTE IN SW
ENCODER 1
ENCODER 0
GND
ENCODER
S902

no mark : REC/PB mode
( ) : REC mode
( ) : PB mode
* : Impossible to measure the voltage of the marked point.

BOARD \ SYSCON CPU	SYSTEM CONTROL MICRO COMPUTER VERSION	
	CXP5058H −154Q	CXP5058H −186Q and later
TJ-4 GM-8	Attached	None

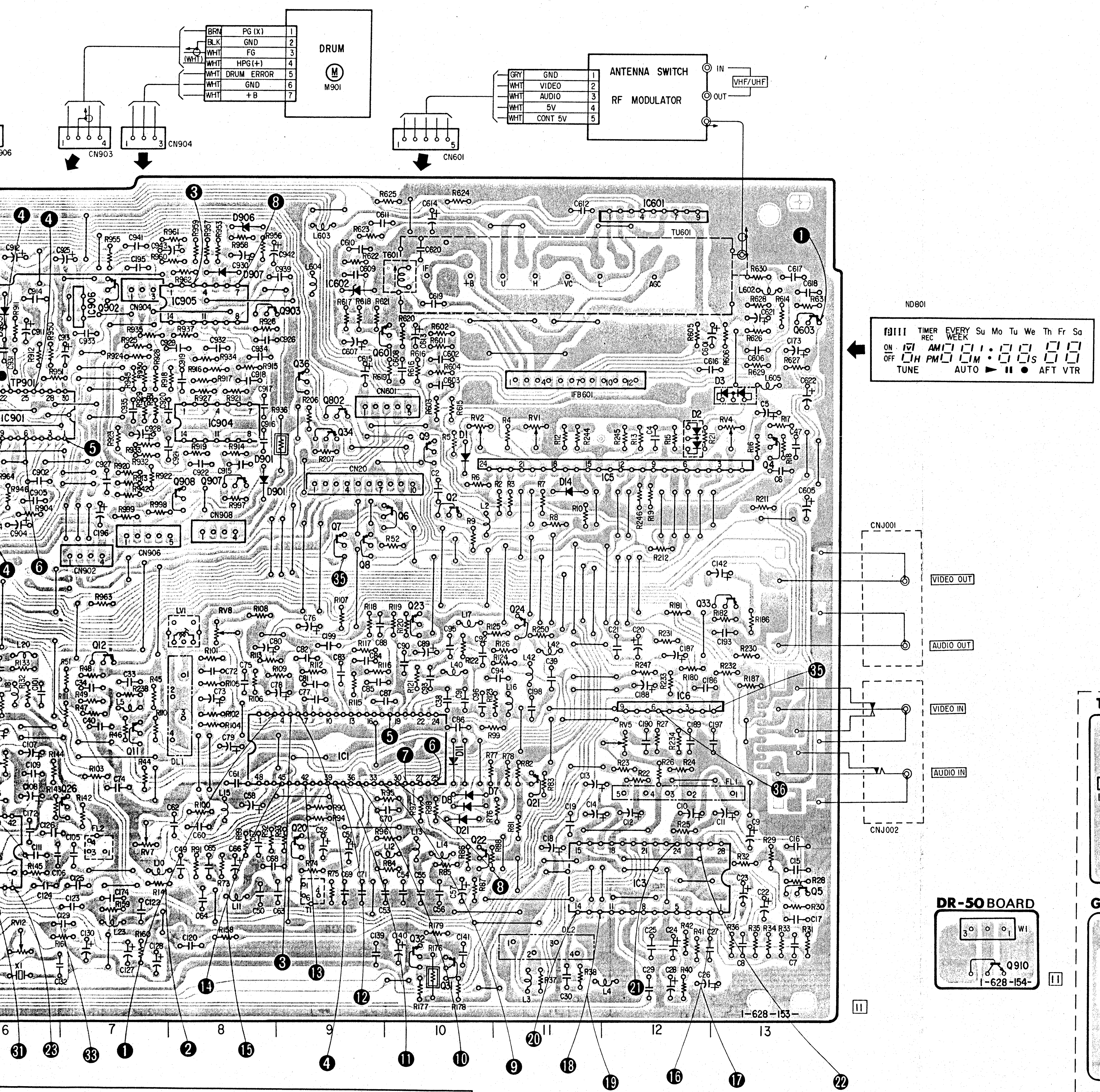
VS-33 (SERVO, SYSTEM CONTROL, AUDIO, TUNER, TIMER), DR-50 (CAPSTAN DRIVE), TJ-4, GM-8 (CAPSTAN REVIEW) PRINTED WIRING BOARDS

—Ref. No. VS-33 DR-50, TJ-4 and GM-8 BOARDS: 2,000 series—


CAPSTAN
M902
GND
CAP ERROR
STD BY
CAP REV
+B
FG2
GND
FG1
+B
GRY
DRUM
M901
BRN
BLK
WHT
PG (X)
GND
FG
HPG(+)
DRUM ERROR
GND
+B
ANTENNA SWITCH
RF MODULATOR
IN
OUT
VHF/UHF
GND
VIDEO
AUDIO
5V
CONT 5V
S901-2 CASSETTE IN SW
S901-1 CASSETTE DOWN SW
L902 T SENSOR
L901 S SENSOR
CN809
CN804
CN805
CN907
CN906
CN903
CN904
CN601
CN808
ENCODER
1 ENCODER
2 ENCODER
3 GND
CN806
CN807
M903 CAM MOTOR
M904 LOADING MOTOR
CN701
CN905
AUDIO ERASE HEAD
FULL ERASE HEAD
AUDIO HEAD
CTL HEAD
VS-33 BOARD
TO TJ-4 BOARD B501
TO TJ-4 BOARD W101
TO TJ-4 BOARD W102
TO TJ-4 BOARD W103
TO TJ-4 BOARD W104
TO GM-8 BOARD W105
IC801
IC802
IC804
IC805
IC806
IC901
IC902
IC903
IC904
IC905
IC601
TU601
IC602
IC701
IC1
IC2
IC3
IC5
IC6
TP901
ND801
TIMER REC
ON
OFF
AM
PM
TUNE
CNJ001
CNJ002
VIDE
AUD
1-628-153-
A
B
C
D
E
F
G
H
1
2
3
4
5
6
7
8
9
10
11
12
13

SERVO, SYSTEM CONTROL, AUDIO, TUNER, TIMER

SERVO, SYSTEM CONTROL, AUDIO, TUNER, TIMER

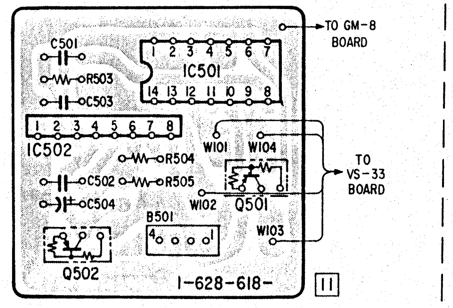

DRUM
M901
BRN PG (X) 1
BLK GND 2
(WHT) WHT FG 3
WHT HPG (+) 4
WHT DRUM ERROR 5
WHT GND 6
WHT +B 7
CN903
CN904
ANTENNA SWITCH
RF MODULATOR
GRY GND 1
WHT VIDEO 2
WHT AUDIO 3
WHT 5V 4
WHT CONT 5V 5
IN
OUT
VHF/UHF
CN601
ND801
TIMER REC
EVERY WEEK
Su Mo Tu We Th Fr Sa
ON OFF
AM PM
H M S
TUNE
AUTO
AFT VTR
CNJ001
VIDEO OUT
AUDIO OUT
VIDEO IN
AUDIO IN
CNJ002
IC901
IC904
IC905
IC601
IC602
TU601
IFB601
IC5
IC6
IC1
IC3
1-628-153-
6
7
8
9
10
11
12
13
W1
Q910
1-628-154-

DR-50 BOARD

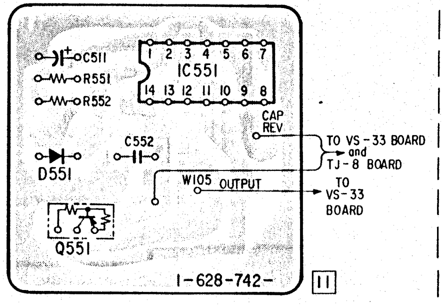
CN020	C · 9
CN601	C · 10
CN701	G · 3
CN801	E · 3
CN802	F · 1
CN804	A · 4
CN805	A · 4
CN806	B · 4
CN807	B · 4
CN808	A · 3
CN809	A · 3
CN902	D · 7
CN903	C · 5
CN904	B · 7
CN905	A · 6
CN906	D · 7
CN907	A · 5
CN908	D · 8
D001	C · 10
D002	C · 12
D003	C · 13
D007	F · 10
D008	F · 10
D011	F · 10
D014	C · 11
D021	F · 10
D801	E · 2
D802	E · 2
D803	D · 2
D804	D · 2
D805	D · 3
D806	D · 3
D807	E · 1
D808	D · 3
D809	B · 4
D901	C · 8
D904	B · 6
D905	B · 6
D906	A · 8
D907	A · 8
IC001	F · 9
IC002	G · 5
IC003	G · 12
IC005	C · 12
IC006	E · 12
IC601	A · 12
IC602	B · 9
IC701	F · 3
IC801	C · 2
IC802	D · 2
IC804	B · 2
IC805	B · 4
IC806	C · 4
IC901	C · 6
IC902	3 · 5
IC903	B · 5
IC904	C · 8
IC905	B · 8
IC906	B · 7
LV001	E · 8
Q002	D · 10

Q004	C · 13
Q005	G · 13
Q006	D · 10
Q007	D · 9
Q008	D · 9
Q009	C · 10
Q011	F · 7
Q012	E · 7
Q020	G · 9
Q021	F · 11
Q022	G · 10
Q023	E · 10
Q024	E · 11
Q026	F · 7
Q027	E · 5
Q028	E · 5
Q029	F · 5
Q030	G · 6
Q031	H · 10
Q032	H · 10
Q033	D · 13
Q034	C · 9
Q036	B · 9
Q037	E · 5
Q038	E · 5
Q045	E · 5
Q601	B · 10
Q603	B · 13
Q701	H · 3
Q702	F · 3
Q801	E · 1
Q802	C · 9
Q805	D · 3
Q806	E · 2
Q901	C · 4
Q902	B · 7
Q903	B · 8
Q905	D · 5
Q906	C · 6
Q907	C · 8
Q908	C · 8
RV001	C · 11
RV002	C · 10
RV004	C · 13
RV005	F · 12
RV007	G · 7
RV008	E · 8
RV010	F · 6
RV011	F · 4
RV012	H · 6
RV701	H · 3
RV901	E · 3
RV902	B · 5
TP901	B · 6

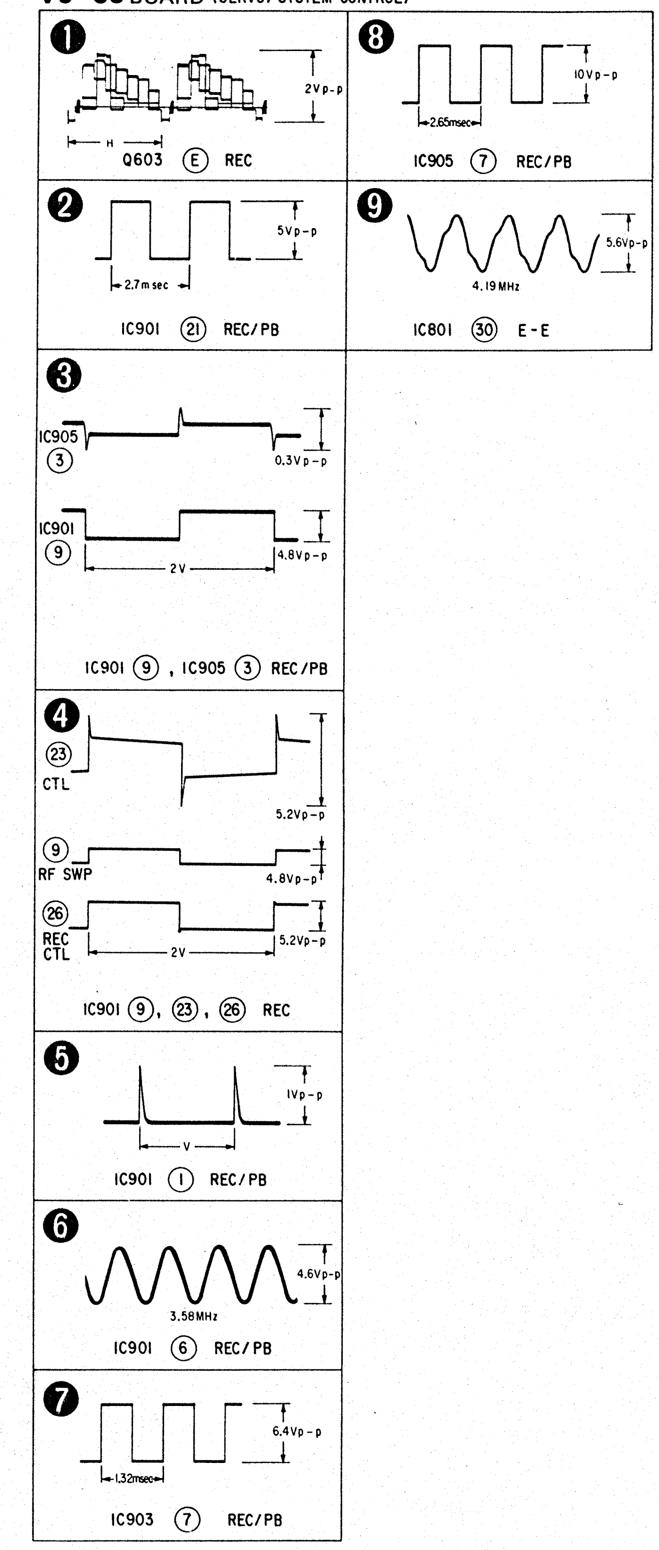
TJ-4 BOARD


TO GM-8 BOARD
C501
R503
C503
IC501
IC502
R504
R505
W101
W104
TO VS-33 BOARD
C502
C504
W102
Q501
B501
W103
Q502
1-628-618-

GM-8 BOARD


C511
R551
R552
IC551
CAP REV
C552
TO VS-33 BOARD and TJ-8 BOARD
D551
W105 OUTPUT
TO VS-33 BOARD
Q551
1-628-742-

VS-33 BOARD (SERVO/SYSTEM CONTROL)

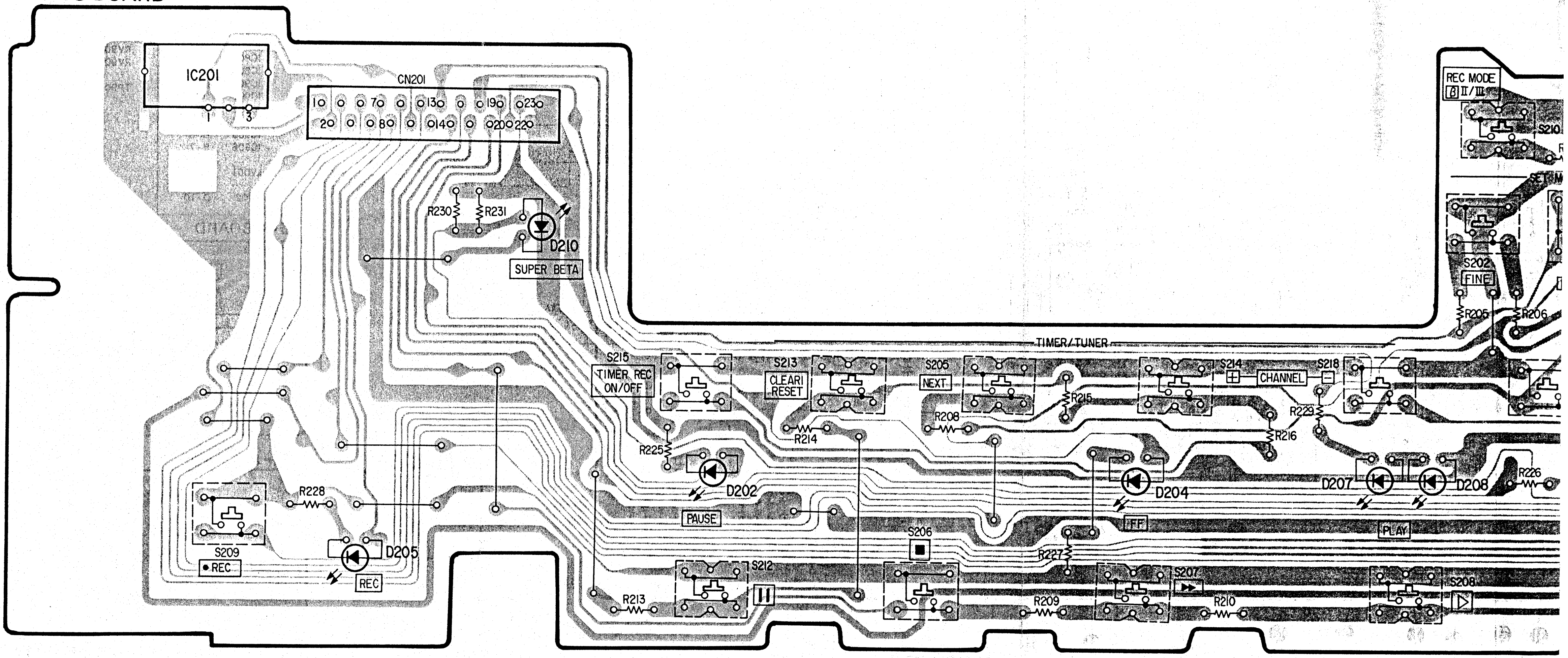


SYSCON CPU BOARD	SYSTEM CONTROL MICRO COMPUTER VERSION	
	CXP5058H -154Q	CXP5058H -186Q and later
TJ-4 GM-8	Attached	None

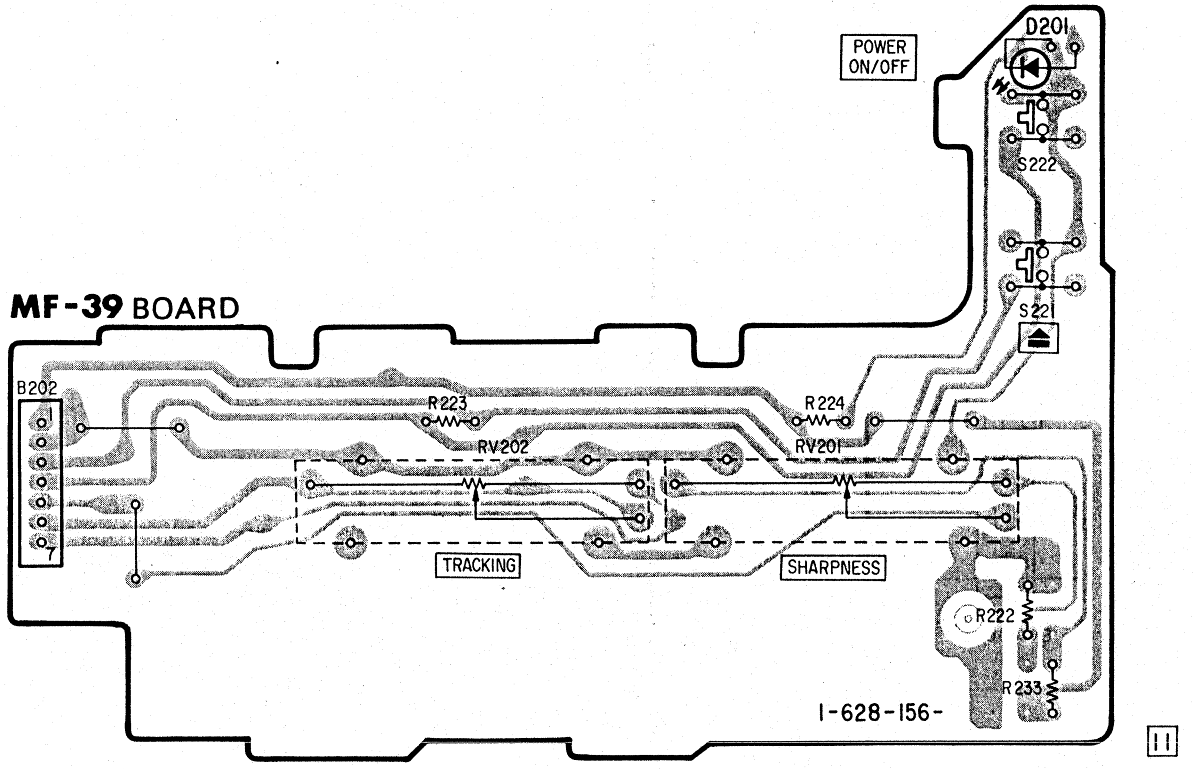
MF-39, MF-40 (FUNCTION SWITCH) PRINTED WIRING BOARDS

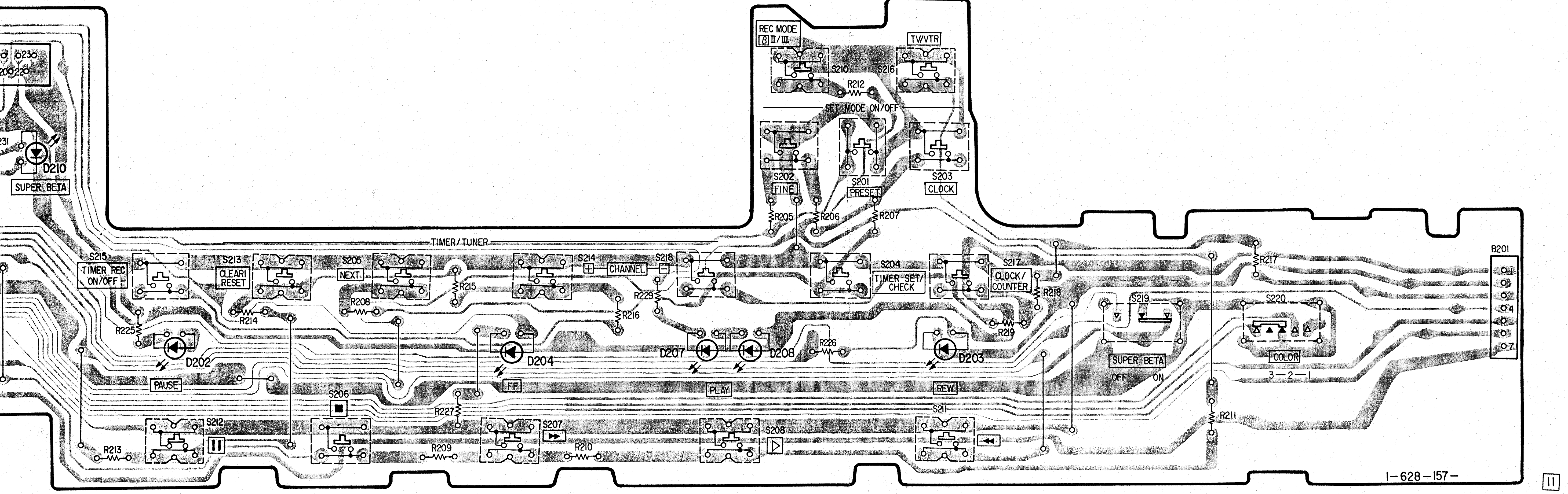
—Ref. No. MF-39 and MF-40 BOARDS: 3,000 series—

MF-40 BOARD


IC201
1
3
CN201
1
2
7
8
13
14
19
20
22
23
R230
R231
D210
SUPER BETA
TIMER/TUNER
S215
TIMER REC ON/OFF
S213
CLEAR/RESET
S205
NEXT
S214
+
CHANNEL
S218
−
R215
R229
R216
R208
R214
R225
D202
PAUSE
D204
FF
D207
D208
PLAY
R226
S206
■
R227
S212
II
R213
S207
▶▶
R210
R209
S208
▷
S209
● REC
R228
D205
REC
REC MODE
β II/III
S210
S202
FINE
R205
R206

MF-39 BOARD

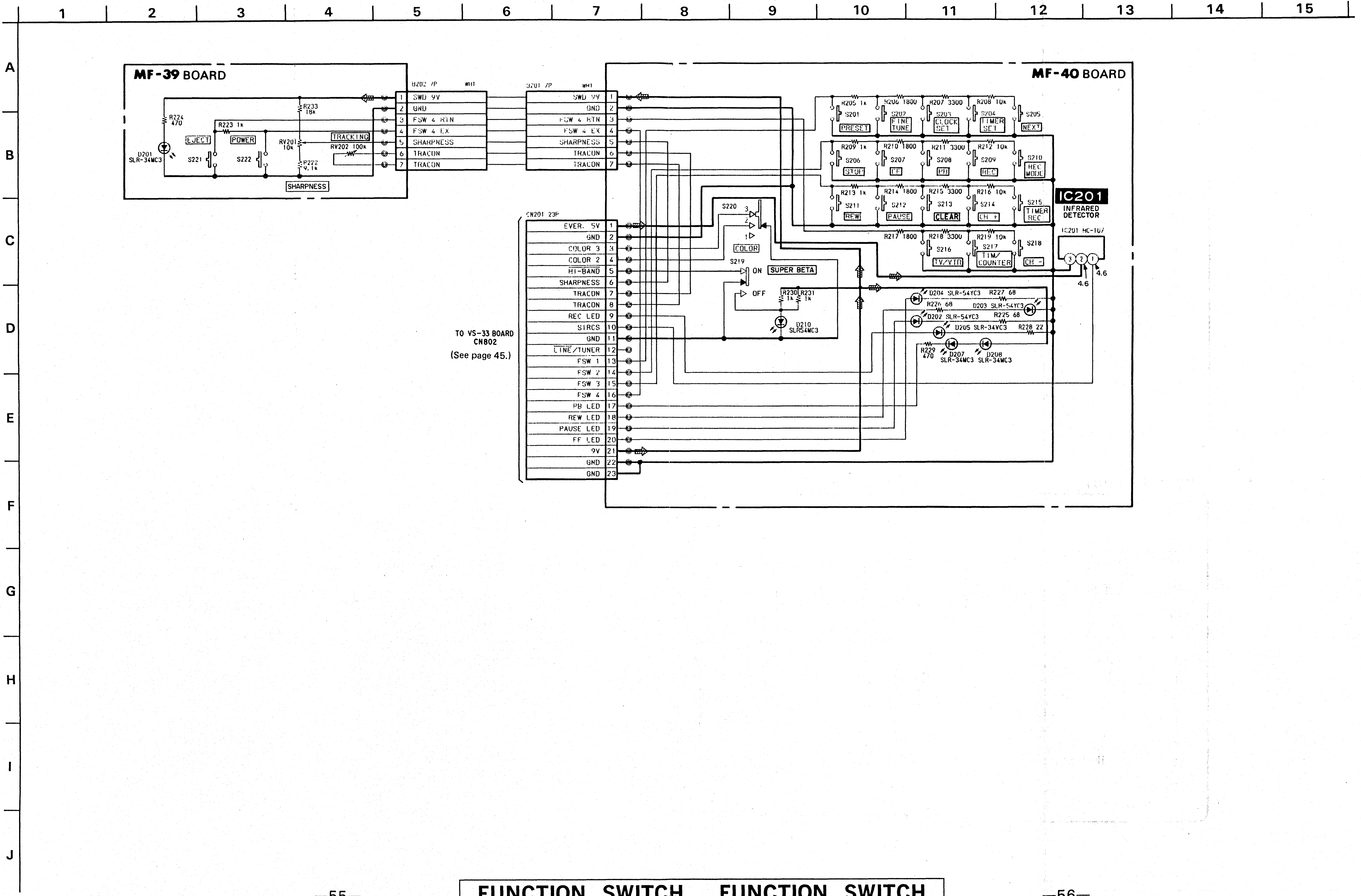

POWER ON/OFF
D201
S222
S221
B202
1
7
R223
R224
RV202
RV201
TRACKING
SHARPNESS
R222
R233
1-628-156-
11


REC MODE β II/III
TV/VTR
S210
S216
R212
SET MODE ON/OFF
S202
FINE
S201
PRESET
S203
CLOCK
R205
R206
R207
D210
SUPER BETA
TIMER/TUNER
S215
TIMER REC ON/OFF
S213
CLEAR/ RESET
S205
NEXT
R215
S214
⊞
CHANNEL
S218
⊟
R229
S204
TIMER SET/ CHECK
S217
CLOCK/ COUNTER
R218
R217
B201
1
4
7
R208
R214
R216
R225
D202
D204
D207
D208
R226
D203
R219
S219
S220
SUPER BETA
OFF ON
COLOR
3—2—1
PAUSE
FF
PLAY
REW
S206
■
R227
S212
II
S207
▶▶
R213
R209
R210
S208
▷
S211
◀◀
R211
1-628-157-
11

FUNCTION SWITCH FUNCTION SWITCH

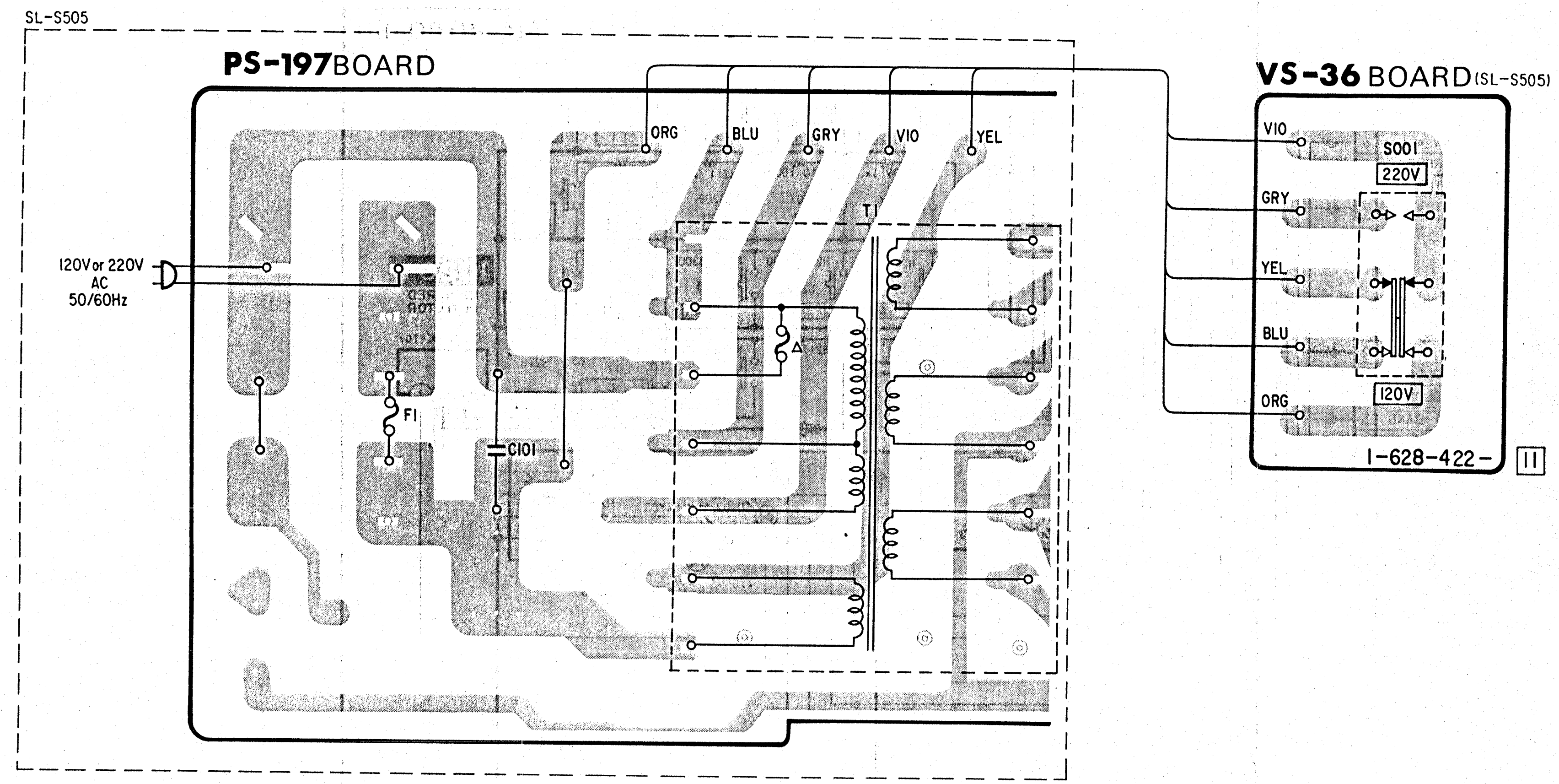
MF-39, MF-40 (FUNCTION SWITCH) SCHEMATIC DIAGRAM

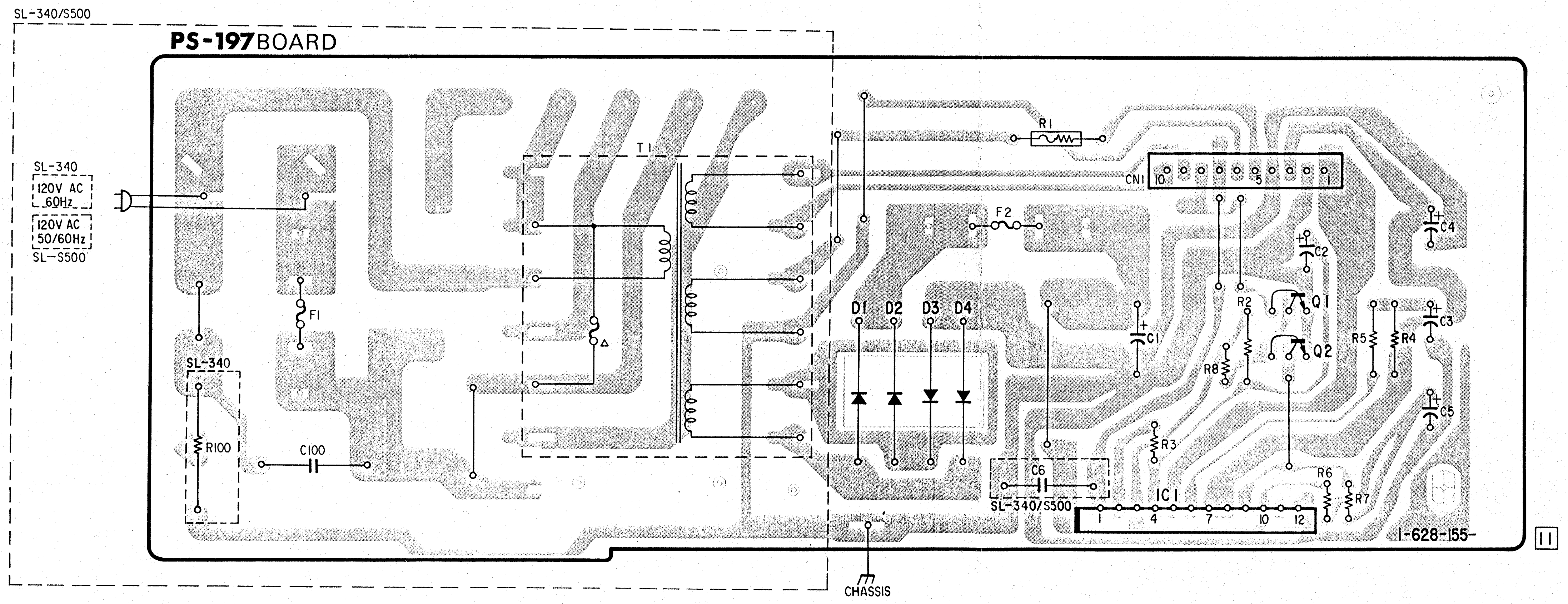
—Ref. No. MF-39 and MF-40 BOARD: 3,000 series—


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
MF-39 BOARD
R224 470
D201 SLR-34MC3
R223 1k
EJECT
S221
POWER
S222
R233 18k
RV201 10k
R222 9.1k
SHARPNESS
TRACKING
RV202 100k
B202 7P WHT
1 SWD 9V
2 GND
3 FSW 4 RTN
4 FSW 4 EX
5 SHARPNESS
6 TRACON
7 TRACON
B201 7P WHT
SWD 9V 1
GND 2
FSW 4 RTN 3
FSW 4 EX 4
SHARPNESS 5
TRACON 6
TRACON 7
MF-40 BOARD
R205 1k
S201
PRESET
R206 1800
S202
FINE TUNE
R207 3300
S203
CLOCK SET
R208 10k
S204
TIMER SET
S205
NEXT
R209 1k
S206
STOP
R210 1800
S207
FF
R211 3300
S208
PB
R212 10k
S209
REC
S210
REC MODE
R213 1k
S211
REW
R214 1800
S212
PAUSE
R215 3300
S213
CLEAR
R216 10k
S214
CH +
S215
TIMER REC
IC201
INFRARED DETECTOR
R217 1800
R218 3300
S216
TV/VTR
R219 10k
S217
TIM/COUNTER
S218
CH −
IC201 HC-107
3
2
1
4.6
4.6
S220
3
2
1
COLOR
S219
ON
OFF
SUPER BETA
R230 1k
R231 1k
D210 SLR54MC3
D204 SLR-54YC3
R227 68
R226 68
D203 SLR-54YC3
D202 SLR-54YC3
R225 68
D205 SLR-34VC3
R228 22
R229 470
D207 SLR-34MC3
D208 SLR-34MC3
CN201 23P
EVER. 5V 1
GND 2
COLOR 3 3
COLOR 2 4
HI-BAND 5
SHARPNESS 6
TRACON 7
TRACON 8
REC LED 9
SIRCS 10
GND 11
LINE/TUNER 12
FSW 1 13
FSW 2 14
FSW 3 15
FSW 4 16
PB LED 17
REW LED 18
PAUSE LED 19
FF LED 20
9V 21
GND 22
GND 23
TO VS-33 BOARD CN802
(See page 45.)

PS-197 (POWER) VS-36 (VOLTAGE SELECTOR) PRINTED WIRING BOARDS

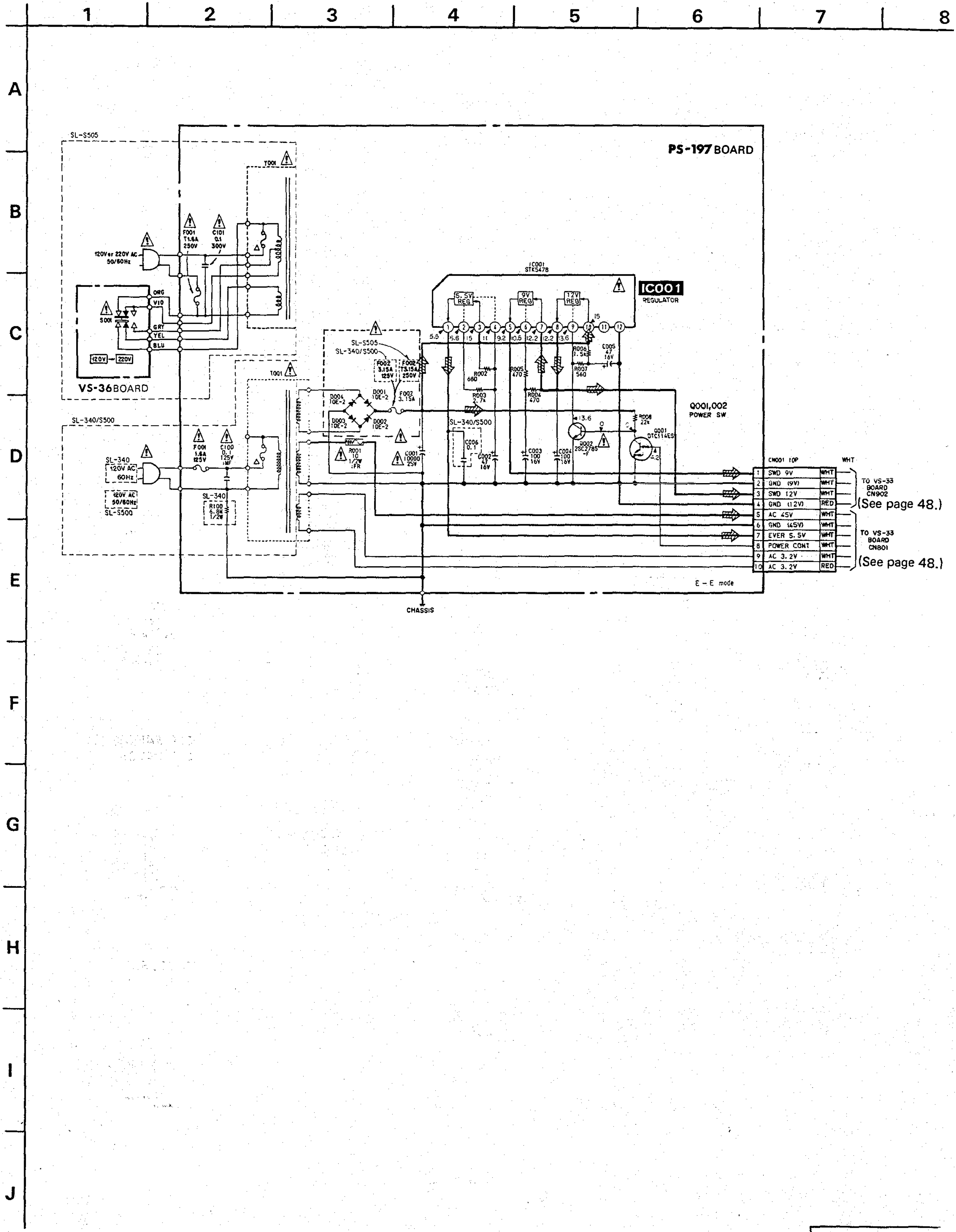
—Ref. No. PS-197 BOARD: 4,000 series, VS-36 BOARD: 5,000 series—


SL-S505
PS-197BOARD
120V or 220V AC 50/60Hz
ORG
BLU
GRY
VIO
YEL
T1
F1
C101
VS-36 BOARD (SL-S505)
VIO
GRY
YEL
BLU
ORG
S001
220V
120V
1-628-422-
11


SL-340/S500
PS-197BOARD
SL-340
120V AC 60Hz
120V AC 50/60Hz
SL-S500
T1
F1
SL-340
R100
C100
R1
CN1
10
5
1
F2
C4
C2
D1
D2
D3
D4
C1
R2
Q1
Q2
R8
R5
R4
C3
C5
R3
C6
SL-340/S500
IC1
1
4
7
10
12
R6
R7
1-628-155-
11
CHASSIS

PS-197 (POWER) VS-36 (VOLTAGE SELECTOR) SCHEMATIC DIAGRAM

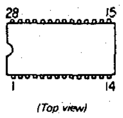
—Ref. No. PS-197 BOARD : 4,000 series, VS-36 BOARD : 5,000series—



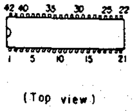
1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
H
I
J
PS-197 BOARD
SL-S505
T001
F001
T1.6A
250V
C101
0.1
300V
120V or 220V AC
50/60Hz
ORG
VIO
GRY
YEL
BLU
S001
120V → 220V
VS-36 BOARD
SL-340/S500
SL-340
120V AC
60Hz
120V AC
50/60Hz
SL-S500
F001
1.6A
125V
C100
0.1
125V
:MF
SL-340
R100
6.8M
1/2W
IC001
STK5478
5.5V REG
9V REG
12V REG
IC001
REGULATOR
5.5
5.6
15
11
9.2
10.5
12.2
12.2
13.6
15
SL-S505
SL-340/S500
F002
3.15A
125V
F002
T3.15A
250V
D004
10E-2
D001
10E-2
F002
3.15A
D003
10E-2
D002
10E-2
R001
10
1/2W
:FR
C001
10000
25V
R002
680
R003
2.7k
SL-340/S500
C006
0.1
C002
47
16V
R005
470
R004
470
C003
100
16V
C004
100
16V
R006
1.5k
R007
560
C005
47
16V
13.6
0
0
R008
22k
Q002
2SC2785
-F
Q001
DTC114ES
4.2
Q001,002
POWER SW
CN001 10P
WHT
1 SWD 9V WHT
2 GND (9V) WHT
3 SWD 12V WHT
4 GND (12V) RED
5 AC 45V WHT
6 GND (45V) WHT
7 EVER 5.5V WHT
8 POWER CONT WHT
9 AC 3.2V WHT
10 AC 3.2V RED
TO VS-33
BOARD
CN902
(See page 48.)
TO VS-33
BOARD
CN801
(See page 48.)
E – E mode
CHASSIS

4-3. SEMICONDUCTORS

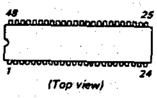
CX866B


28
15
1
14
(Top view)

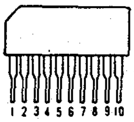
CX10021B-NP


42 40 35 30 25 22
1 5 10 15 21
(Top view)

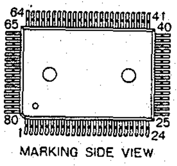
CX20043


48
25
1
24
(Top view)

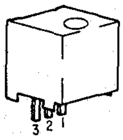
CXK1004L


1 2 3 4 5 6 7 8 9 10

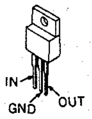
CXP5058H-154Q


64
41
65
40
80
25
1
24
MARKING SIDE VIEW

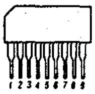
HC107



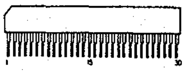
L78M05



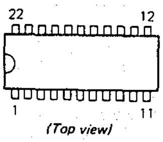
LA7205
LA7920
TA7350P



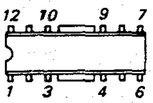
LA7297



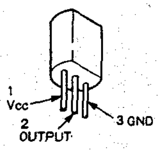
LA7320


22
12
1
11
(Top view)

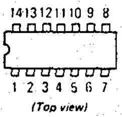
LB1649


12 10 9 7
1 3 4 6

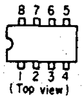
PST529F


1
Vcc
2
OUTPUT
3 GND

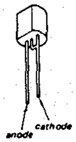
TC504013BP
μPC324C


14 13 12 11 10 9 8
1 2 3 4 5 6 7
(Top view)

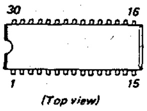
μPC4556C


8 7 6 5
1 2 3 4
(Top view)

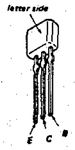
μPC574J


anode
cathode

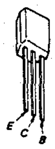
μPD6163ACA-50X


30
16
1
15
(Top view)

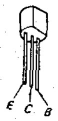
2SA1175
2SC2785


letter side
E C B

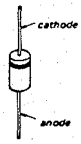
2SA1345
2SA1348
2SC403SP
2SC3399
2SC3400
2SC3402
2SC3860
2SC4048
DTA114TS



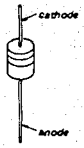
2SB1013
2SD655-G
2SD1387



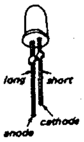
10E2N
RD5.6EB2
RD6.8EB2


cathode
anode

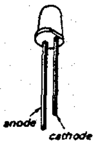
11ES2
1SS119
1SS202-1


cathode
anode

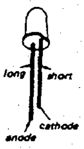
PY5504S-1


long
short
cathode
anode

SLR-34MC3
SLR-34VC3


anode
cathode

TLY113AP


long
short
cathode
anode

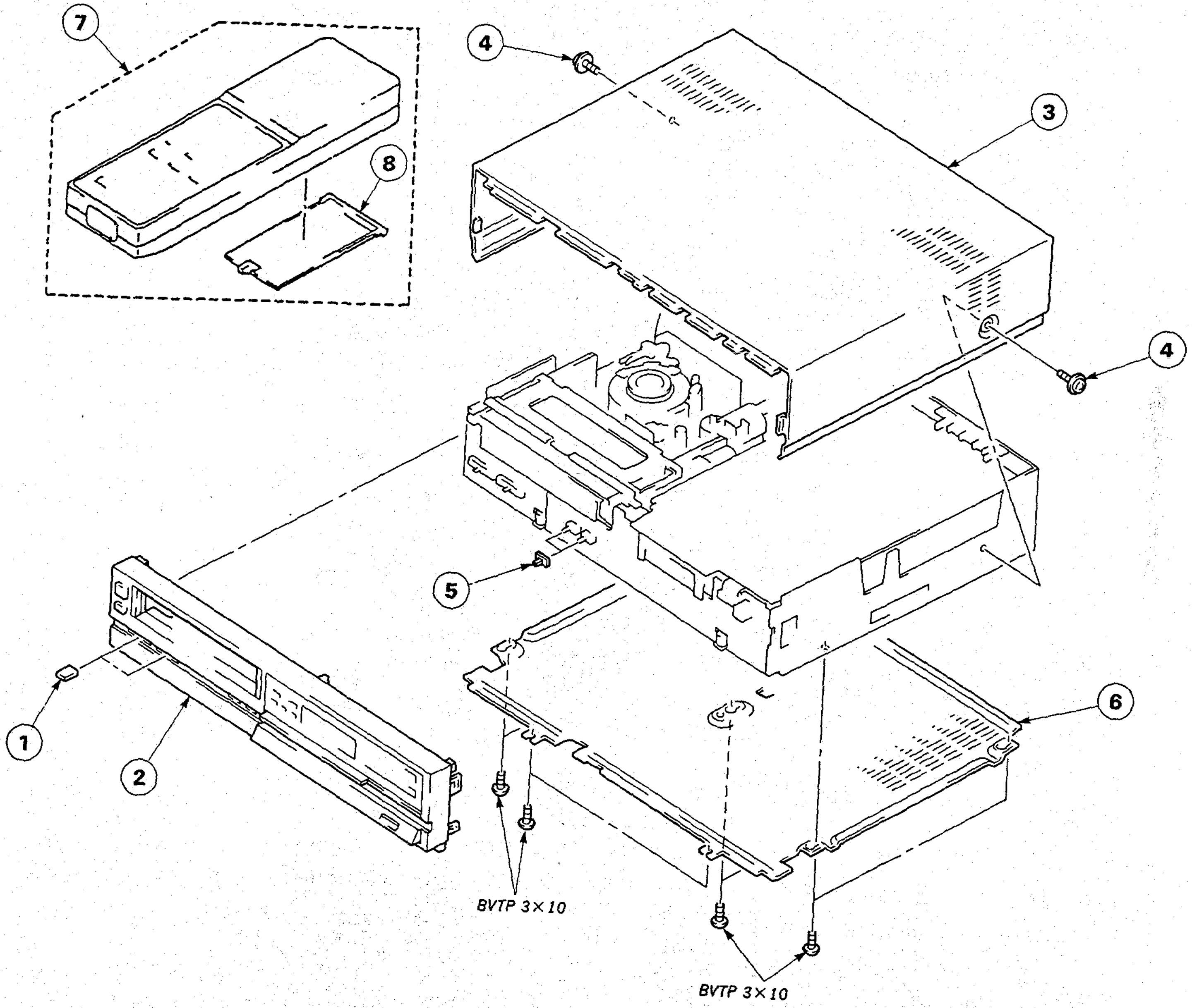
SECTION 5
EXPLODED VIEWS

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.

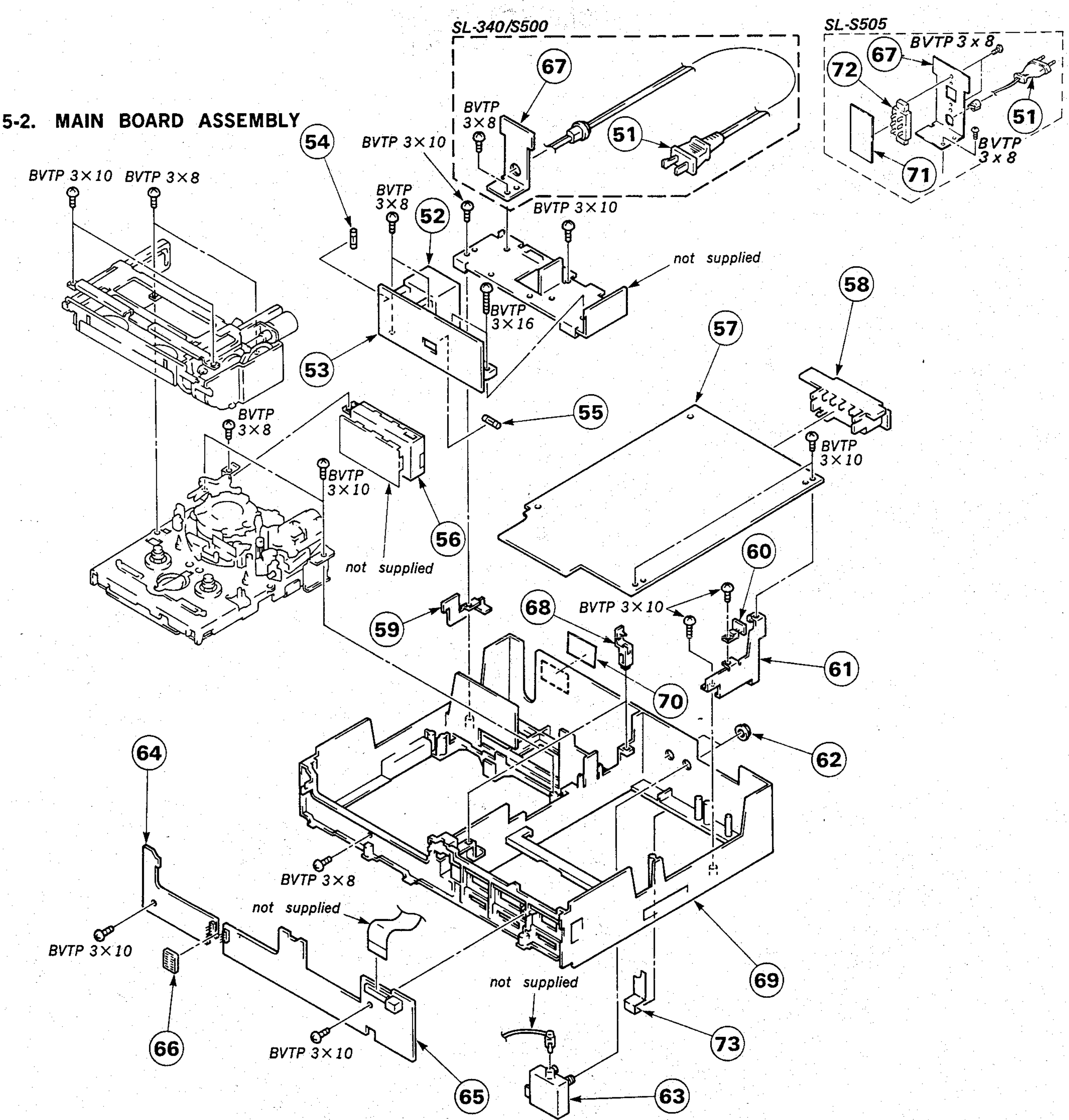
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-1. FRONT PANEL, COVER ASSEMBLIES



No.	Part No.	Description	Remark
1	3-729-403-01	KNOB, SLIDE VOL	
2	X-3729-402-1	PANEL ASSY, FRONT (SL-S500)	
	X-3729-403-1	PANEL ASSY, FRONT (SL-340)	
	X-3729-404-1	PANEL ASSY, FRONT (SL-S505)	
3	3-695-045-51	CASE, UPPER	
4	4-886-821-01	SCREW, M3 CASE	
5	3-721-557-01	KNOB, SELECTION	
6	*3-723-185-11	PLATE, BOTTOM	
7	1-463-845-12	REMOTE COMMANDER (RMT-156)	8
8	3-716-159-01	COVER, BATTERY	

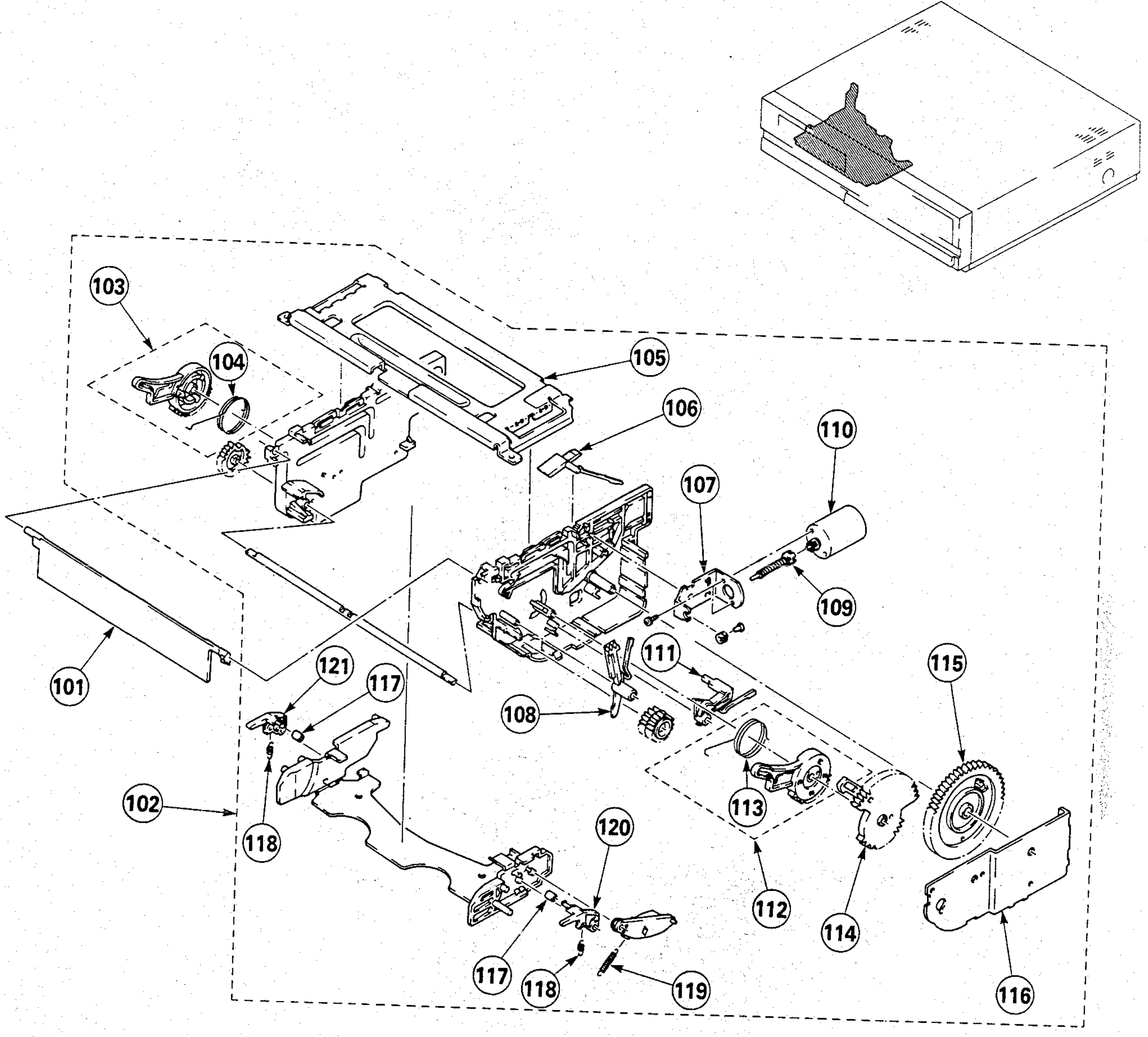
5-2. MAIN BOARD ASSEMBLY


SL-340/S500
SL-S505
67
BVTP 3 x 8
72
67
51
71
BVTP 3 x 8
BVTP 3×8
51
54
BVTP 3×10
BVTP 3×10
BVTP 3×8
BVTP 3×8
52
BVTP 3×10
not supplied
BVTP 3×16
58
57
53
55
BVTP 3×8
BVTP 3×10
BVTP 3×10
56
not supplied
60
68
BVTP 3×10
59
61
70
62
64
BVTP 3×8
not supplied
BVTP 3×10
69
not supplied
66
BVTP 3×10
73
65
63

No.	Part No.	Description	Remark
51	⚠.1-551-478-00	CORD, POWER (WITH CORD BUSHING) (SL-340/S500)	
	⚠ 1-555-795-00	CORD, POWER, EULO PLUG (SL-S505)	
52	⚠.1-448-866-11	TRANSFORMER, POWER (T001)(SL-340/S500)	
	⚠ 1-448-923-11	TRANSFORMER, POWER (T001)(SL-S505)	
53	*A-6723-380-A	PS-197 BOARD, COMPLETE (SL-S500)	
	*A-6723-388-A	PS-197 BOARD, COMPLETE (SL-S505)	
	*A-6723-389-A	PS-197 BOARD, COMPLETE (SL-340)	
54	⚠.1-532-742-11	FUSE, GLASS TUBE (1.6A/125V) (F001) (SL-340/S500)	
	⚠ 1-532-259-00	FUSE, TIME-LAG (SL-S505)	
55	⚠.1-532-745-11	FUSE, GLASS TUBE (3.15A/125V) (F002) (SL-340/S500)	
	⚠ 1-532-237-00	FUSE, TIME-LAG (SL-S505)	
56	*A-6738-393-A	RP BLOCK ASSY	
57	*A-6711-988-A	VS-33 BOARD, COMPLETE	
58	3-716-115-21	COVER (UPPER), JACK (SL-S500/S505)	
	3-716-115-01	COVER (UPPER), JACK (SL-340)	
59	*3-729-409-01	BRACKET (LEFT)	
60	*1-628-154-11	DR-50 BOARD	
61	*3-729-407-01	BRACKET (RIGHT)	
62	3-682-691-00	NUT, WASHER HEXAGON	
63	⚠.1-464-782-11	MODULATOR, RF (RFU-784)	
64	*1-628-156-11	MF-39 BOARD	
65	*1-628-157-11	MF-40 BOARD	
66	1-565-775-11	CONNECTOR, BOARD TO BOARD 7P	
67	*3-729-410-01	BRACKET, AC (SL-340/S500)	
	*3-729-410-11	BRACKET, AC (SL-S505)	
68	*3-730-717-01	HINGE, PCB	
69	*3-723-186-11	FRAME, MOLD (SL-S500/S505)	
	*3-723-186-21	FRAME, MOLD (SL-340)	
70	*3-729-416-01	LABEL, MODEL NUMBER (NO.4)(SL-340)	
	*3-729-418-01	LABEL, MODEL NUMBER (NO.3)(SL-S505)	
71	*1-628-422-11	VS-36 BOARD (SL-S505)	
72	⚠ 1-571-069-11	SELECTOR, POWER VOLTAGE (SL-S505)	
73	*3-723-196-01	PLATE, GROUND, RFU	

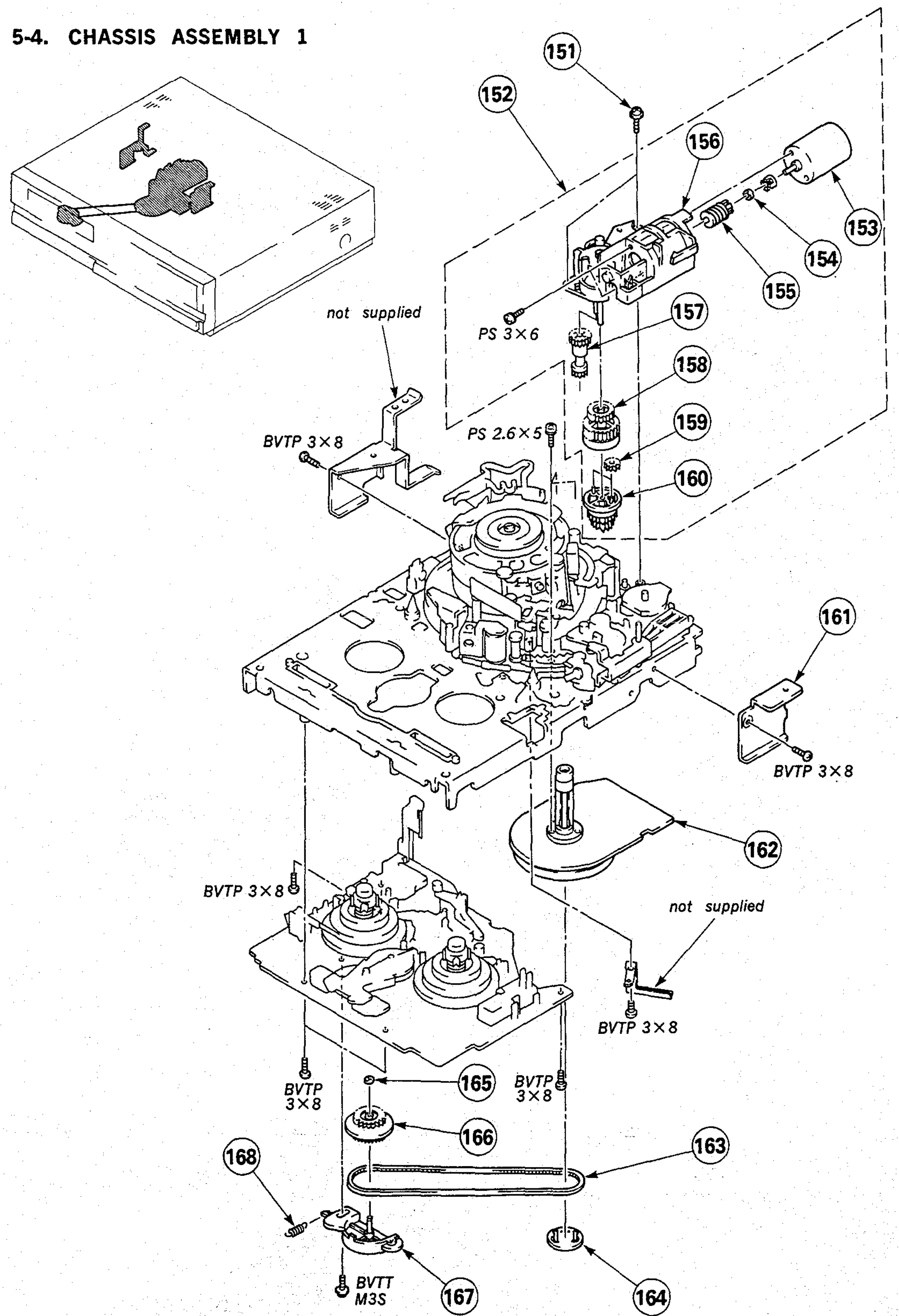
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

5-3. FRONT LOADING ASSEMBLY



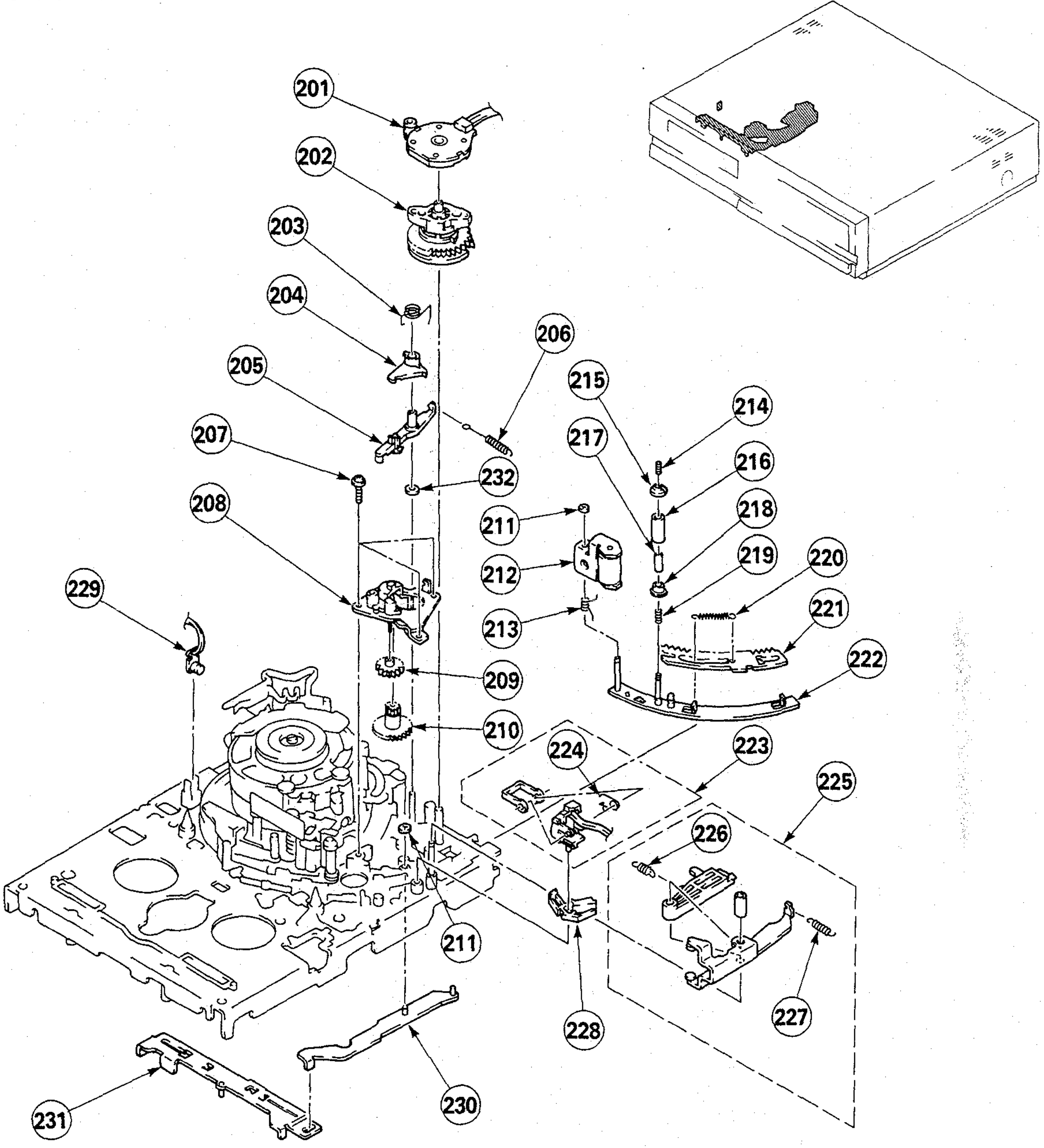
No.	Part No.	Description	Remark
101	3-716-098-01	DOOR	
102	*A-6751-380-A	THREATING BLOCK ASSY, FRONT	103-121
103	A-6751-334-A	ARM (LEFT) BLOCK ASSY, DRIVING	104
104	3-716-030-01	SPRING (LEFT), TORSION	
105	*3-716-127-01	PLATE, TOP	
106	3-716-021-01	LOCK, DECK	
107	3-721-508-01	BRACKET, MOTOR	
108	*3-716-084-02	ARM, DOOR SWITCHING	
109	3-716-028-01	GEAR, WORM	
110	X-3716-074-1	MOTOR ASSY, L (LOADING) (M904)	
111	3-716-083-01	LEVER, CASSETTE IN SWITCH	
112	A-6751-335-A	ARM (RIGHT)BLOCK ASSY, DRIVING	113
113	3-716-029-01	SPRING (RIGHT), TORSION	
114	3-716-069-01	GEAR, DRIVING	
115	3-716-082-01	WHEEL, WORM	
116	3-716-094-01	COVER, GEAR	
117	*3-886-569-00	TUBE, RUBBER	
118	*3-716-048-01	SPRING, TENSION	
119	3-716-155-01	SPRING, TENSION	
120	*3-716-068-01	LEVER (LIGHT), CASSETTE PRESS	
121	*3-716-090-01	LEVER (LEFT), CASSETTE PRESS	

5-4. CHASSIS ASSEMBLY 1


151
152
156
153
154
155
not supplied
PS 3×6
157
158
BVTP 3×8
PS 2.6×5
159
160
161
BVTP 3×8
162
BVTP 3×8
not supplied
BVTP 3×8
BVTP 3×8
165
BVTP 3×8
166
168
163
BVTT M3S
167
164

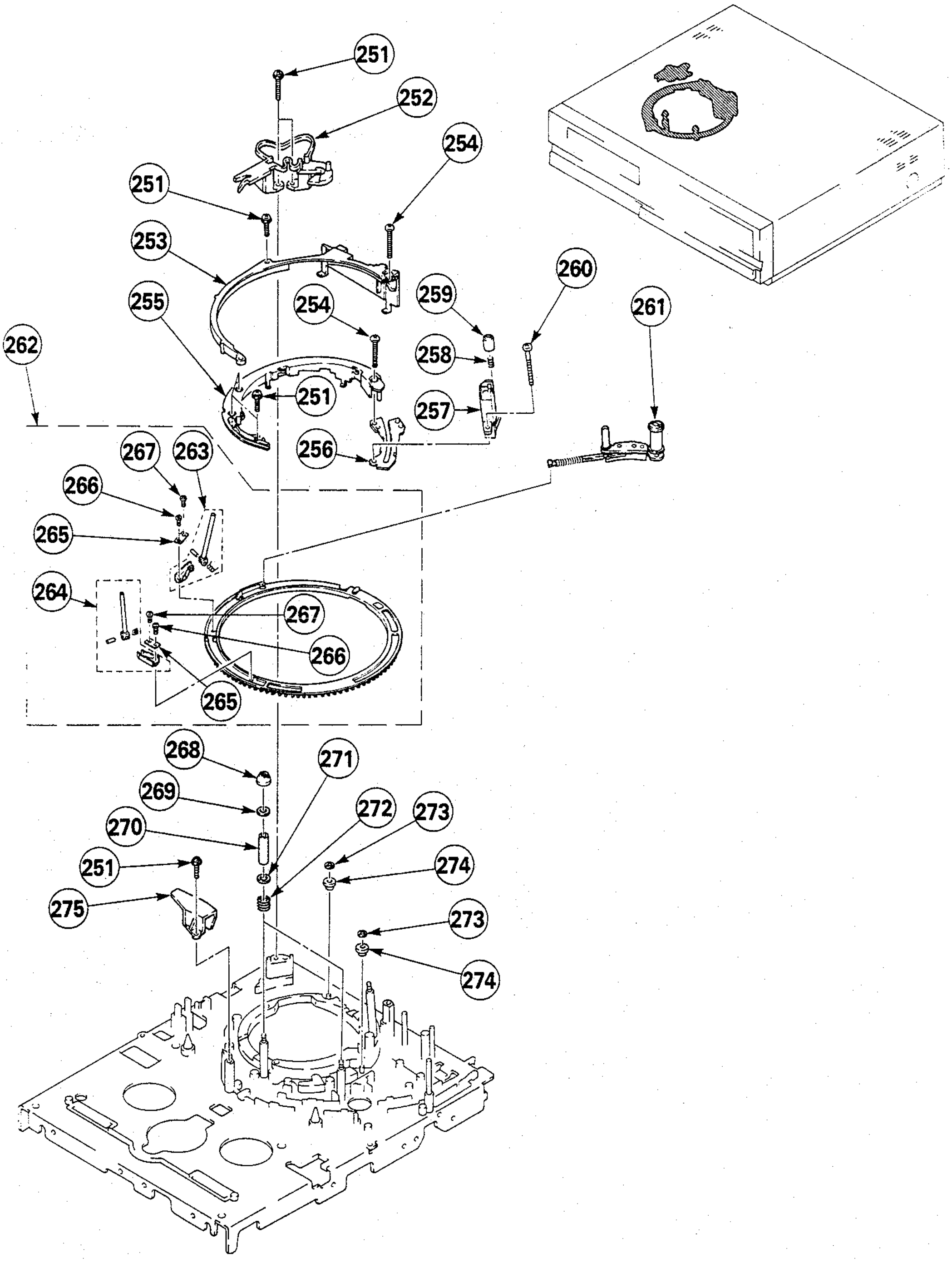
No.	Part No.	Description	Remark
151	3-716-147-01	SCREW (2.6X8), TAPPING	
152	A-6706-852-A	MOTOR UNIT BLOCK ASSY, L	153-160
153	1-541-309-11	MOTOR, L (RF-370C) (CAM) (M903)	
154	3-696-388-01	RUBBER, JOINT	
155	3-716-004-01	GEAR, WORM	
156	X-3716-020-1	HOLDER ASSY, PLANET GEAR	
157	X-3716-012-1	GEAR ASSY, CAM RELAY	
158	X-3716-018-1	GEAR ASSY, INNER	
159	3-696-325-01	GEAR, PLANET	
160	X-3716-011-1	GEAR ASSY, DRIVING	
161	*3-716-058-01	FOOT (RIGHT), MD FITTING	
162	8-835-334-01	MOTOR, DC BHF-1917B (CAPSTAN) (M902)	
163	3-716-017-01	BELT, TIMING	
164	3-716-025-01	HOLDER, BELT	
165	3-669-465-00	WASHER (1.5), STOPPER	
166	3-716-047-01	GEAR, RELAY	
167	X-3716-003-1	ARM ASSY, ADJUSTMENT	
168	3-716-031-01	SPRING, TENSION	

5-5. CHASSIS ASSEMBLY 2


201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
211
231
232

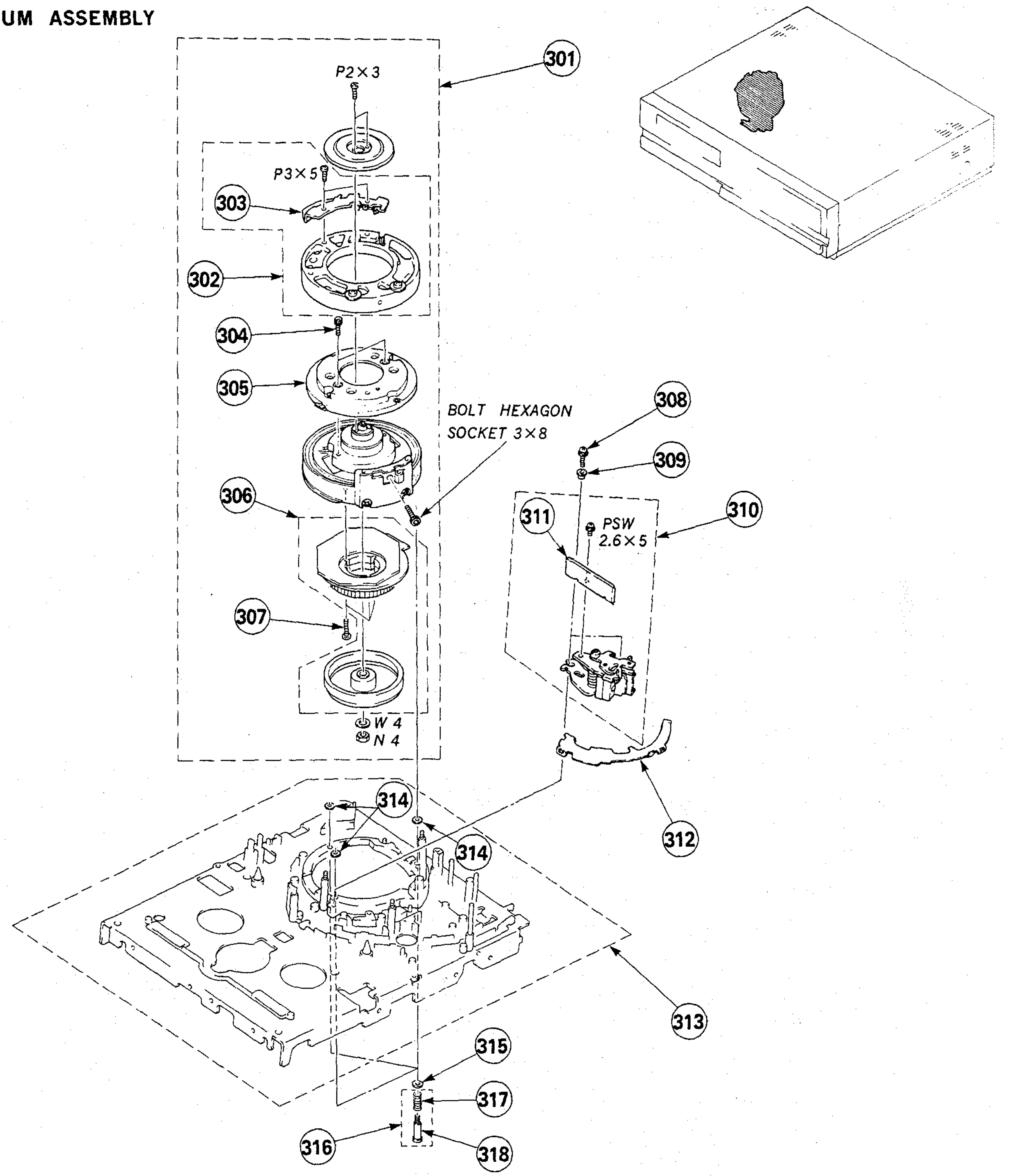
No.	Part No.	Description	Remark
201	1-571-024-11	SWITCH, ROTARY (ENCODER) (S902)	
202	X-3716-015-1	CAM ASSY	
203	3-696-343-01	SPRING	
204	3-696-337-01	INVERTOR, LOCK ARM	
205	X-3696-319-1	ARM ASSY, LOCK	
206	3-716-052-01	SPRING, TENSION	
207	3-716-147-01	SCREW (2.6X8), TAPPING	
208	X-3716-021-1	CHASSIS ASSY, D GEAR	
209	3-716-013-01	GEAR, T	
210	A-675-022-9A	GEAR, S	
211	3-669-596-00	WASHER (2.3), STOPPER	
212	A-6759-344-A	ARM ASSY, PINCH ROLLER	
213	3-683-441-01	SPRING	
214	3-716-163-01	SCREW, FLANGE	
215	3-676-650-00	FLANGE (UPPER) (#9), GUIDE	
216	3-676-649-11	ROLLER (#9), GUIDE	
217	3-672-559-00	SLEEVE, GUIDE	
218	3-669-432-00	FLANGE (LOWER) (#9), GUIDE	
219	3-693-941-01	SPRING (#9), COMPRESSION	
220	3-549-014-00	SPRING, TENSION	
221	3-716-096-01	GEAR, T SLIDER	
222	X-3716-027-1	SLIDER (Y) ASSY, T	
223	X-3716-014-1	SENSOR ASSY, T (L902)	224
224	3-716-042-01	SPRING	
225	X-3716-019-1	ARM ASSY, PINCH PRESS	226, 227
226	3-716-054-01	SPRING, TENSION	
227	3-716-051-01	SPRING, TENSION	
228	3-716-059-01	ARM, T SHUTTER	
229	1-464-781-11	SENSOR, COIL (L901)	
230	X-3716-017-1	LEVER ASSY, CAM	
231	X-3716-013-1	PLATE ASSY, SLIDE	
232	3-701-438-11	WASHER, 2.5	

5-6. CHASSIS ASSEMBLY 3


251
252
254
251
253
255
254
259
260
261
262
258
251
257
256
267
263
266
265
264
267
266
265
268
271
269
272
273
270
274
251
275
273
274

No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
251	3-716-147-01	SCREW (2.6X8), TAPPING		264	X-3669-429-0	HOLDER BLOCK ASSY, #2 GUIDE	
252	3-716-122-01	PLATE, ADJUSTMENT		265	*A-6759-107-C	RETAINER, SPRING, LEAF	
253	3-716-128-01	GUIDE (2-Y), SHUTTLE		266	3-672-586-00	SCREW (1.4X3), TAPPING	
254	3-669-466-21	SCREW (M 2.6)		267	3-669-478-00	SCREW (1X3), TAPPING	
255	3-716-129-01	GUIDE (1-Y), SHUTTLE		268	A-6759-246-B	NUT, ADJUSTMENT, GUIDE	
256	X-3716-016-1	BASE ASSY, SLANT		269	3-684-135-01	WASHER (UPPER), GUIDE, #7, 8	
257	8-825-508-61	HEAD, FULL ERASE		270	3-693-830-01	SLEEVE, GUIDE, #7,#8	
258	3-716-167-01	SPRING, COMPRESSION		271	3-693-831-01	WASHER, GUIDE	
259	3-716-038-01	FLANGE, GUIDE, #6		272	3-693-943-01	SPRING (#7,#8), COMPRESSION	
260	3-669-606-00	SCREW (2.6)		273	3-669-465-00	WASHER (1.5), STOPPER	
261	A-6750-158-B	SHUTTLE (2) BLOCK ASSY		274	3-669-360-00	ROLLER, RING	
262	X-3716-029-1	RING (B3) ASSY, S	263-267	275	3-716-033-01	PLATE, GUIDE	
263	X-3669-430-0	HOLDER BLOCK ASSY, #3 GUIDE					

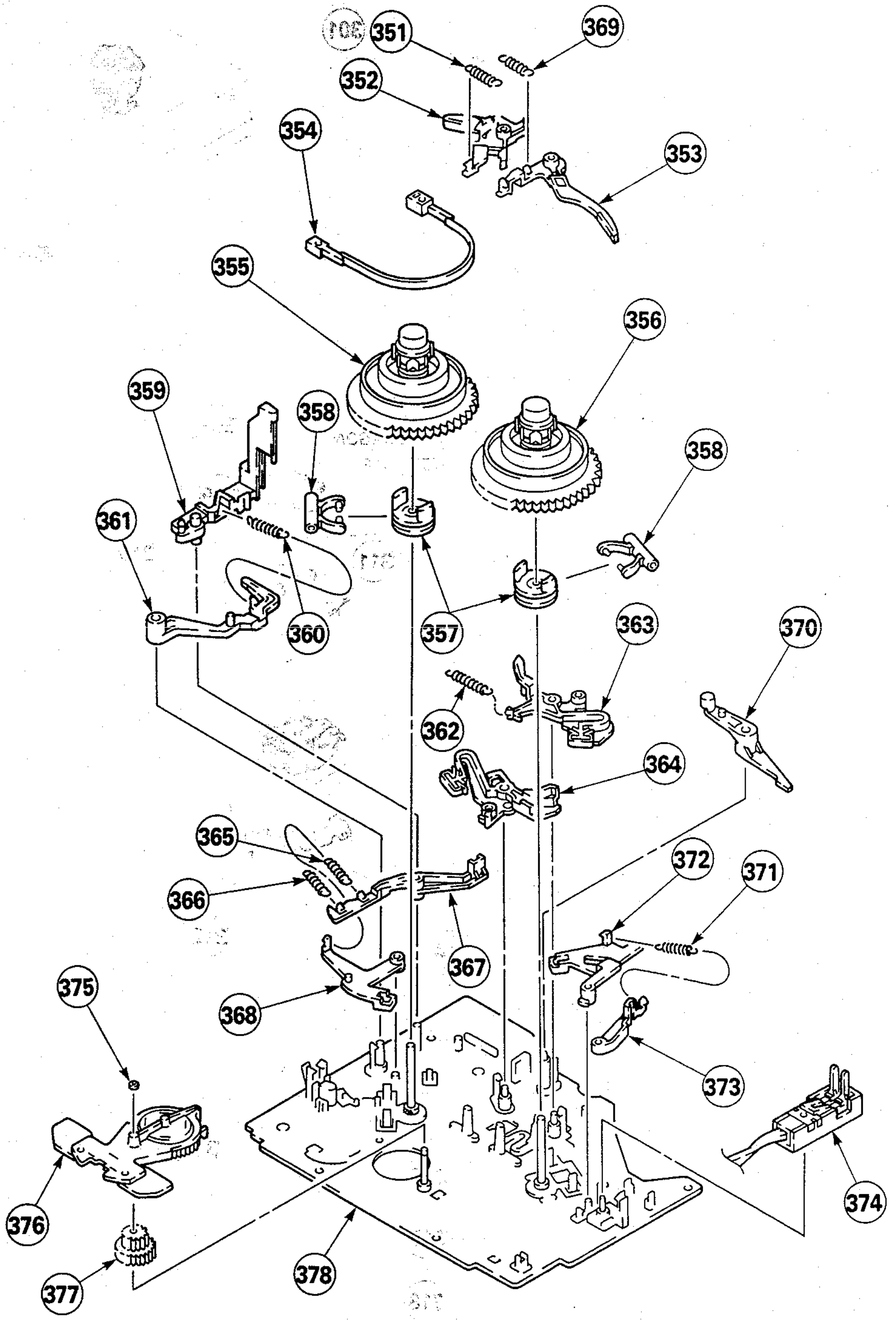
5-7. DRUM ASSEMBLY


P2×3
301
P3×5
303
302
304
305
BOLT HEXAGON SOCKET 3×8
308
309
306
311
PSW 2.6×5
310
307
W 4
N 4
314
314
312
313
315
317
316
318

No.	Part No.	Description	Remark
301	A-6050-583-A	DRUM ASSY (DFH-01A-R)(SL-S500/505)	302-307
	A-6050-588-A	DRUM ASSY (DFH-02A-R)(SL-340)	302-307
302	A-6760-138-A	DRUM ASSY, UPPER	303
303	A-6760-066-B	SPRING ASSY, TAPE RETAINER	
304	3-669-157-00	BOLT (WASHER) (2.6X8)	
305	A-6762-378-A	DISK ASSY (DFR-01-R)(SL-S500/505)	
	A-6762-383-A	DISK ASSY (DFR-02-R)(SL-340)	
306	1-541-615-11	MOTOR, DC (E20EL42) (DRUM) (M901)	
307	3-720-811-01	SCREW, +P (M2X12)	
308	3-716-146-01	SCREW (2.6X12)	

No.	Part No.	Description	Remark
309	3-684-247-01	BUSHING, ACE	
310	A-6761-122-A	HEAD BLOCK ASSY, ACE	311
311	3-693-895-01	PROTECTOR (S)	
312	*3-716-073-01	RECLINER, PIN	
313	*X-3716-031-1	CHASSIS ASSY, MECHANICAL	314
314	3-669-646-00	SPACER, DRUM	
315	3-669-600-11	WASHER, FLAT (3.5)	
316	X-3693-838-1	SCREW ASSY, FITTING	317, 318
317	3-429-123-00	SPRING	
318	3-694-212-01	SCREW, FITTING	

5-8. REEL BASE ASSEMBLY


351
369
352
354
353
355
356
359
358
358
361
360
357
363
370
362
364
365
372
371
366
367
375
368
373
376
374
378
377

No.	Part No.	Description	Remark
351	3-716-032-01	SPRING, TENSION	
352	3-716-074-01	ARM, S SOFT BRAKE	
353	X-3716-001-1	BRAKE ASSY, T SOFT	
354	X-3716-004-1	BAND ASSY, TENSION REGULATOR	
355	X-3716-025-1	TABEL ASSY, S REEL	
356	X-3716-026-1	TABEL ASSY, T REEL	
357	*3-696-386-01	RING, UD	
358	3-716-019-01	ARM, UD	
359	X-3716-005-1	LEVER ASSY, TENSION REGULATOR	
360	*3-716-152-01	SPRING, TENSION	
361	3-716-072-01	LEVER, FUNCTION	
362	3-696-395-01	SPRING, TENSION	
363	X-3716-006-1	BRAKE ASSY, T	
364	X-3716-007-1	BRAKE ASSY, S	
365	3-691-776-01	SPRING, TENSION	
366	3-696-394-01	SPRING, TENSION	
367	*3-696-478-01	DETECTOR, S CLUTCH	
368	*3-696-437-01	LEVER, S LIMITER	
369	3-684-235-01	SPRING, TENSION	
370	X-3716-002-1	SENSOR ASSY, RING	
371	3-696-398-01	SPRING, TENSION	
372	3-716-117-01	LEVER, RD	
373	3-716-056-01	ARM, RD	
374	1-571-023-11	SWITCH, LEAF (2 GANG) (CASSETTE DOWN/REC PROOF) (S901)	
375	3-669-465-00	WASHER (1.5), STOPPER	
376	A-6759-335-A	ARM BLOCK ASSY, PENDULUM	
377	3-716-045-01	GEAR, REEL DRIVING	
378	X-3716-028-1	CHASSIS ASSY, SUB	

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF: μF, PF: μμF.

RESISTORS
- All resistors are in ohms.
- F: nonflammable

COILS
- MMH: mH, UH: μH

SEMICONDUCTORS
In each case, U: μ, for example:
UA...: μA..., UPA...: μPA...,
UPC...: μPC, UPD...: μPD...

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
	*A-6711-988-A	VS-33 BOARD, COMPLETE **********************			
	*3-716-114-01	HOLDER, FL			
		CAPACITOR			
C002	1-164-062-11	CERAMIC	47PF	5%	50V
C004	1-161-055-00	CERAMIC	0.022MF	10%	25V
C005	1-124-499-11	ELECT	1MF	20%	50V
C006	1-164-096-11	CERAMIC	0.01MF		50V
C007	1-164-062-11	CERAMIC	47PF	5%	50V
C008	1-102-980-00	CERAMIC	270PF	5%	50V
C009	1-126-233-11	ELECT	22MF	20%	25V
C010	1-126-233-11	ELECT	22MF	20%	25V
C011	1-126-233-11	ELECT	22MF	20%	25V
C012	1-124-927-11	ELECT	4.7MF	20%	50V
C013	1-126-233-11	ELECT	22MF	20%	25V
C014	1-126-233-11	ELECT	22MF	20%	25V
C015	1-164-064-11	CERAMIC	56PF	5%	50V
C016	1-164-039-11	CERAMIC	3PF	0.25PF	50V
C017	1-164-066-11	CERAMIC	68PF	5%	50V
C018	1-126-233-11	ELECT	22MF	20%	25V
C019	1-164-096-11	CERAMIC	0.01MF		50V
C020	1-126-233-11	ELECT	22MF	20%	25V
C021	1-164-096-11	CERAMIC	0.01MF		50V
C022	1-124-925-11	ELECT	2.2MF	20%	50V
C023	1-124-925-11	ELECT	2.2MF	20%	50V
C024	1-126-233-11	ELECT	22MF	20%	25V
C025	1-164-096-11	CERAMIC	0.01MF		50V
C026	1-123-875-11	ELECT	10MF	20%	50V
C027	1-102-820-00	CERAMIC	330PF	5%	50V
C028	1-123-875-11	ELECT	10MF	20%	50V
C029	1-164-096-11	CERAMIC	0.01MF		50V
C030	1-164-096-11	CERAMIC	0.01MF		50V
C031	1-164-096-11	CERAMIC	0.01MF		50V
C033	1-164-070-11	CERAMIC	100PF	5%	50V
C034	1-164-096-11	CERAMIC	0.01MF		50V
C038	1-164-046-91	CERAMIC	10PF	0.5PF	50V
C039	1-164-043-11	CERAMIC	7PF	0.5PF	50V
C040	1-164-096-11	CERAMIC	0.01MF		50V
C047	1-164-096-11	CERAMIC	0.01MF		50V
C049	1-164-052-11	CERAMIC	18PF	5%	50V
C050	1-164-056-11	CERAMIC	27PF	5%	50V
C051	1-124-446-11	ELECT	47MF	20%	10V
C052	1-124-446-11	ELECT	47MF	20%	10V
C053	1-164-052-11	CERAMIC	18PF	5%	50V
C054	1-164-060-11	CERAMIC	39PF	5%	50V
C055	1-164-060-11	CERAMIC	39PF	5%	50V
C056	1-164-046-91	CERAMIC	10PF	0.5PF	50V
C057	1-124-446-11	ELECT	47MF	20%	10V
C058	1-126-233-11	ELECT	22MF	20%	25V
C060	1-164-096-11	CERAMIC	0.01MF		50V
C061	1-164-096-11	CERAMIC	0.01MF		50V
C062	1-164-096-11	CERAMIC	0.01MF		50V
C063	1-130-471-00	MYLAR	0.001MF	5%	50V
C064	1-164-070-11	CERAMIC	100PF	5%	50V
C065	1-102-820-00	CERAMIC	330PF	5%	50V
C066	1-123-875-11	ELECT	10MF	20%	50V
C067	1-164-083-91	CERAMIC	680PF	10%	50V
C068	1-161-021-11	CERAMIC	0.047MF	10%	25V
C069	1-164-096-11	CERAMIC	0.01MF		50V
C070	1-164-096-11	CERAMIC	0.01MF		50V
C071	1-164-096-11	CERAMIC	0.01MF		50V
C072	1-164-096-11	CERAMIC	0.01MF		50V
C073	1-126-233-11	ELECT	22MF	20%	25V
C074	1-164-096-11	CERAMIC	0.01MF		50V
C075	1-164-070-11	CERAMIC	100PF	5%	50V
C076	1-124-446-11	ELECT	47MF	20%	10V
C077	1-161-772-11	CERAMIC	0.1MF	10%	25V
C078	1-126-233-11	ELECT	22MF	20%	25V
C079	1-124-499-11	ELECT	1MF	20%	50V
C080	1-123-875-11	ELECT	10MF	20%	50V
C081	1-164-072-91	CERAMIC	120PF	5%	50V
C082	1-164-096-11	CERAMIC	0.01MF		50V
C083	1-161-021-11	CERAMIC	0.047MF	10%	25V
C084	1-101-361-00	CERAMIC	150PF	5%	50V
C085	1-164-096-11	CERAMIC	0.01MF		50V
C086	1-164-096-11	CERAMIC	0.01MF		50V
C087	1-164-046-91	CERAMIC	10PF	0.5PF	50V
C088	1-164-096-11	CERAMIC	0.01MF		50V
C089	1-126-233-11	ELECT	22MF	20%	25V
C090	1-164-096-11	CERAMIC	0.01MF		50V
C091	1-164-096-11	CERAMIC	0.01MF		50V
C092	1-130-485-00	MYLAR	0.015MF	5%	50V
C093	1-164-096-11	CERAMIC	0.01MF		50V
C094	1-102-978-00	CERAMIC	220PF	5%	50V
C095	1-164-066-11	CERAMIC	68PF	5%	50V
C096	1-164-070-11	CERAMIC	100PF	5%	50V
C098	1-164-096-11	CERAMIC	0.01MF		50V
C099	1-164-070-11	CERAMIC	100PF	5%	50V
C100	1-164-062-11	CERAMIC	47PF	5%	50V
C101	1-102-978-00	CERAMIC	220PF	5%	50V
C102	1-164-087-11	CERAMIC	0.0015MF	10%	50V
C103	1-164-087-11	CERAMIC	0.0015MF	10%	50V
C104	1-164-087-11	CERAMIC	0.0015MF	10%	50V
C105	1-164-048-91	CERAMIC	12PF	5%	50V
C106	1-164-096-11	CERAMIC	0.01MF		50V
C107	1-124-499-11	ELECT	1MF	20%	50V
C108	1-126-233-11	ELECT	22MF	20%	25V
C109	1-164-096-11	CERAMIC	0.01MF		50V
C110	1-124-927-11	ELECT	4.7MF	20%	50V
C111	1-164-096-11	CERAMIC	0.01MF		50V
C112	1-124-499-11	ELECT	1MF	20%	50V
C113	1-161-051-00	CERAMIC	0.01MF	10%	25V
C114	1-126-233-11	ELECT	22MF	20%	25V
C115	1-164-096-11	CERAMIC	0.01MF		50V

VS-33

Ref.No	Part No.	Description			Remark
C116	1-164-034-91	CERAMIC	43PF	5%	50V
C117	1-161-055-00	CERAMIC	0.022MF	10%	25V
C118	1-124-499-11	ELECT	1MF	20%	50V
C119	1-124-499-11	ELECT	1MF	20%	50V
C120	1-164-080-11	CERAMIC	390PF	10%	50V
C122	1-164-072-91	CERAMIC	120PF	5%	50V
C123	1-164-070-11	CERAMIC	100PF	5%	50V
C124	1-164-076-91	CERAMIC	180PF	10%	50V
C125	1-164-096-11	CERAMIC	0.01MF		50V
C126	1-164-096-11	CERAMIC	0.01MF		50V
C127	1-123-875-11	ELECT	10MF	20%	50V
C128	1-123-875-11	ELECT	10MF	20%	50V
C129	1-161-024-00	CERAMIC	0.082MF	10%	25V
C130	1-124-499-11	ELECT	1MF	20%	50V
C131	1-164-066-11	CERAMIC	68PF	5%	50V
C132	1-164-029-91	CERAMIC	27PF	5%	50V
C133	1-164-096-11	CERAMIC	0.01MF		50V
C134	1-164-068-11	CERAMIC	82PF	5%	50V
C135	1-164-096-11	CERAMIC	0.01MF		50V
C136	1-124-927-11	ELECT	4.7MF	20%	50V
C137	1-164-096-11	CERAMIC	0.01MF		50V
C138	1-126-233-11	ELECT	22MF	20%	25V
C139	1-164-096-11	CERAMIC	0.01MF		50V
C140	1-126-233-11	ELECT	22MF	20%	25V
C141	1-164-096-11	CERAMIC	0.01MF		50V
C142	1-124-471-00	ELECT	1000MF	20%	6.3V
C172	1-164-096-11	CERAMIC	0.01MF		50V
C173	1-124-472-11	ELECT	470MF	20%	10V
C174	1-164-072-91	CERAMIC	120PF	5%	50V
C175	1-102-822-00	CERAMIC	390PF	5%	50V
C186	1-102-123-00	CERAMIC	0.0033MF	10%	50V
C187	1-124-902-00	ELECT	0.47MF	20%	50V
C188	1-124-925-11	ELECT	2.2MF	20%	50V
C189	1-164-096-11	CERAMIC	0.01MF		50V
C190	1-130-489-00	MYLAR	0.033MF	5%	50V
C193	1-164-096-11	CERAMIC	0.01MF		50V
C195	1-164-096-11	CERAMIC	0.01MF		50V
C196	1-124-119-00	ELECT	330MF	20%	16V
C197	1-164-096-11	CERAMIC	0.01MF		50V
C198	1-164-082-91	CERAMIC	560PF	10%	50V
C199	1-164-064-11	CERAMIC	56PF	5%	50V
C601	1-124-443-00	ELECT	100MF	20%	10V
C602	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C603	1-161-055-00	CERAMIC	0.022MF	10%	25V
C605	1-124-499-11	ELECT	1MF	20%	50V
C606	1-164-070-11	CERAMIC	100PF	5%	50V
C607	1-124-917-11	ELECT	33MF	20%	63V
C608	1-101-361-00	CERAMIC	150PF	5%	50V
C609	1-136-165-00	MYLAR	0.1MF	10%	50V
C610	1-136-165-00	MYLAR	0.1MF	10%	50V
C611	1-136-165-00	MYLAR	0.1MF	10%	50V
C612	1-161-051-00	CERAMIC	0.01MF	10%	25V
C613	1-126-233-11	ELECT	22MF	20%	25V
C614	1-126-233-11	ELECT	22MF	20%	25V
C615	1-124-443-00	ELECT	100MF	20%	10V
C616	1-124-270-11	ELECT	0.47MF	20%	50V
C617	1-101-886-00	CERAMIC	62PF	5%	50V
C618	1-164-023-91	CERAMIC	15PF	5%	50V
C619	1-102-943-00	CERAMIC	6PF	0.5PF	50V
C620	1-101-880-00	CERAMIC	47PF	5%	50V
C621	1-124-499-11	ELECT	1MF	20%	50V
C622	1-124-443-00	ELECT	100MF	20%	10V
C701	1-136-561-11	FILM	0.0068MF	10%	400V
C702	1-130-472-00	MYLAR	0.0012MF	10%	50V
C703	1-102-980-00	CERAMIC	270PF	5%	50V
C704	1-161-047-00	CERAMIC	0.0047MF	10%	25V
C705	1-161-043-00	CERAMIC	0.0022MF	10%	25V
C706	1-123-875-11	ELECT	10MF	20%	50V
C707	1-124-963-11	ELECT	33MF	20%	16V
C708	1-123-875-11	ELECT	10MF	20%	50V
C709	1-126-233-11	ELECT	22MF	20%	25V
C710	1-164-085-11	CERAMIC	0.001MF	10%	50V
C711	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C712	1-124-499-11	ELECT	1MF	20%	50V
C713	1-124-499-11	ELECT	1MF	20%	50V
C714	1-124-902-00	ELECT	0.47MF	20%	50V
C715	1-124-927-11	ELECT	4.7MF	20%	50V
C716	1-161-053-00	CERAMIC	0.015MF	10%	25V
C717	1-124-499-11	ELECT	1MF	20%	50V
C718	1-124-499-11	ELECT	1MF	20%	50V
C719	1-161-050-00	CERAMIC	0.0082MF	10%	25V
C720	1-124-963-11	ELECT	33MF	20%	16V
C722	1-161-053-00	CERAMIC	0.015MF	10%	25V
C723	1-161-055-00	CERAMIC	0.022MF	10%	25V
C724	1-124-927-11	ELECT	4.7MF	20%	50V
C727	1-124-499-11	ELECT	1MF	20%	50V
C801 ⚠.	1-124-572-11	ELECT	100MF	20%	63V
C802 ⚠.	1-124-916-11	ELECT	22MF	20%	63V
C803	1-124-472-11	ELECT	470MF	20%	6.3V
C804	1-161-772-11	CERAMIC	0.1MF	10%	25V
C805	1-164-056-11	CERAMIC	27PF	5%	50V
C806	1-164-056-11	CERAMIC	27PF	5%	50V
C807	1-106-383-00	MYLAR	0.047MF	10%	100V
C808	1-124-902-00	ELECT	0.47MF	20%	50V
C809	1-161-021-11	CERAMIC	0.047MF	10%	25V
C810	1-161-021-11	CERAMIC	0.047MF	10%	25V
C811	1-161-021-11	CERAMIC	0.047MF	10%	25V
C812	1-161-021-11	CERAMIC	0.047MF	10%	25V
C813	1-126-233-11	ELECT	22MF	20%	25V
C814	1-161-051-00	CERAMIC	0.01MF	10%	25V
C815	1-164-099-11	CERAMIC	0.0022MF	10%	50V
C816	1-164-099-11	CERAMIC	0.0022MF	10%	50V
C819	1-126-233-11	ELECT	22MF	20%	25V
C820	1-161-772-11	CERAMIC	0.1MF	10%	25V
C902	1-161-021-11	CERAMIC	0.047MF	10%	25V
C903	1-124-499-11	ELECT	1MF	20%	50V

When indicating parts by reference number, please include the board name.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Ref.No	Part No.	Description			Remark
C904	1-131-405-00	ELECT(SOLID)	0.33MF	5%	25V
C905	1-130-485-00	MYLAR	0.015MF	5%	50V
C907	1-124-499-11	ELECT	1MF	20%	50V
C909	1-123-875-11	ELECT	10MF	20%	50V
C910	1-136-157-00	MYLAR	0.022MF	10%	50V
C911	1-123-875-11	ELECT	10MF	20%	50V
C912	1-124-446-11	ELECT	47MF	20%	10V
C913	1-124-446-11	ELECT	47MF	20%	10V
C914	1-124-631-11	ELECT	47MF	20%	16V
C915	1-161-051-00	CERAMIC	0.01MF	10%	25V
C916	1-161-043-00	CERAMIC	0.0022MF	10%	25V
C917	1-161-051-00	CERAMIC	0.01MF	10%	25V
C918	1-161-055-00	CERAMIC	0.022MF	10%	25V
C919	1-161-021-11	CERAMIC	0.047MF	10%	25V
C920	1-161-051-00	CERAMIC	0.01MF	10%	25V
C921	1-161-043-00	CERAMIC	0.0022MF	10%	25V
C922	1-161-051-00	CERAMIC	0.01MF	10%	25V
C923	1-124-499-11	ELECT	1MF	20%	50V
C924	1-161-051-00	CERAMIC	0.01MF	10%	25V
C925	1-126-176-11	ELECT	220MF	20%	6.3V
C926	1-161-043-00	CERAMIC	0.0022MF	10%	25V
C927	1-124-767-00	ELECT	2.2MF	20%	50V
C928	1-131-377-00	TANTALUM	10MF	10%	10V
C929	1-124-767-00	ELECT	2.2MF	20%	50V
C930	1-124-443-00	ELECT	100MF	20%	10V
C931	1-130-467-00	MYLAR	470PF	10%	50V
C932	1-161-772-11	CERAMIC	0.1MF	10%	25V
C933	1-161-772-11	CERAMIC	0.1MF	10%	25V
C934	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C935	1-164-096-11	CERAMIC	0.01MF		50V
C936	1-161-772-11	CERAMIC	0.1MF	10%	25V
C937	1-164-096-11	CERAMIC	0.01MF		50V
C938	1-164-096-11	CERAMIC	0.01MF		50V
C939	1-164-096-11	CERAMIC	0.01MF		50V
C940	1-161-051-00	CERAMIC	0.01MF	10%	25V
C941	1-124-767-00	ELECT	2.2MF	20%	50V
C942	1-124-499-11	ELECT	1MF	20%	50V
C943	1-124-925-11	ELECT	2.2MF	20%	50V
C944	1-164-096-11	CERAMIC	0.01MF		50V

FILTER

Ref.No	Part No.	Description
CF001	1-231-302-00	CERAMIC FILTER (4.27MHZ)
CF002	1-567-390-11	FILTER, CERAMIC (10.7MHz)
CF801	1-567-160-21	OSCILLATOR, CERAMIC (4.19MHz)

CONNECTOR

Ref.No	Part No.	Description	Remark
CN020	*1-560-897-00	PIN, CONNECTOR 9P	
CN601	*1-560-893-00	PIN, CONNECTOR 5P	
CN701	*1-560-893-00	PIN, CONNECTOR 5P	
CN801	*1-560-894-00	PIN, CONNECTOR 6P	
CN802	*1-563-600-11	CONNECTOR, FLEXIBLE 23P	
CN804	*1-560-891-00	PIN, CONNECTOR 3P	
CN805	*1-560-891-00	PIN, CONNECTOR 3P	
CN806	*1-560-891-00	PIN, CONNECTOR 3P	
CN807	*1-560-891-00	PIN, CONNECTOR 3P	
CN808	*1-560-891-00	PIN, CONNECTOR 3P	
CN809	*1-560-891-00	PIN, CONNECTOR 3P	
CN902	*1-560-892-00	PIN, CONNECTOR 4P	
CN903	*1-560-892-00	PIN, CONNECTOR 4P	
CN904	*1-560-891-00	PIN, CONNECTOR 3P	
CN905	*1-560-891-00	PIN, CONNECTOR 3P	
CN906	*1-560-893-00	PIN, CONNECTOR 5P	
CN907	*1-560-892-00	PIN, CONNECTOR 4P	
CN908	*1-560-892-00	PIN, CONNECTOR 4P	

JACK

Ref.No	Part No.	Description
CNJ001	1-507-742-51	JACK, PIN 2P
CNJ002	1-563-556-21	JACK, PIN (WITH SW) 2P

DIODE

Ref.No	Part No.	Description
D001	8-719-911-19	DIODE 1SS119
D002	8-719-000-12	DIODE MC931
D003	8-719-000-12	DIODE MC931
D007	8-719-911-19	DIODE 1SS119
D008	8-719-911-19	DIODE 1SS119
D011	8-719-911-19	DIODE 1SS119
D014	8-719-911-19	DIODE 1SS119
D021	8-719-911-19	DIODE 1SS119
D801	⚠8-719-200-82	DIODE 11ES2
D802	⚠8-719-200-82	DIODE 11ES2
D803	8-719-200-82	DIODE 11ES2
D804	8-719-911-19	DIODE 1SS119
D805	8-719-101-47	DIODE RD4.7EL2
D806	8-719-107-94	DIODE 1SS202-1
D807	8-719-100-41	DIODE RD6.8EB2
D808	8-719-911-19	DIODE 1SS119
D809	8-719-100-35	DIODE RD5.6EB2
D901	8-719-911-19	DIODE 1SS119
D904	8-719-911-19	DIODE 1SS119
D905	8-719-911-19	DIODE 1SS119
D906	8-719-101-47	DIODE RD4.7EL2
D907	8-719-911-19	DIODE 1SS119

DELAY LINE

Ref.No	Part No.	Description
DL001	1-415-533-11	DELAY LINE, 1H ULTRASONIC (3.58MHz)
DL002	1-415-532-11	DELAY LINE, 1H ULTRASONIC (10.7MHz)

INDUCTOR

Ref.No	Part No.	Description	
FB801	1-410-396-41	INDUCTOR	0.45UH

FILTER

Ref.No	Part No.	Description
FL001	1-235-558-11	FILTER, LOW PASS
FL002	1-235-986-11	FILTER, BAND PASS

When indicating parts by reference number, please include the board name.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

VS-33

Ref.No	Part No.	Description		Remark
		IC		
IC001	8-759-101-62	IC CX20043		
IC002	8-759-203-99	IC CX10021B-NP		
IC003	8-758-662-00	IC CX-866B		
IC005	1-807-801-21	HYBRID BLOCK BS6300		
IC006	8-759-201-15	IC TA7350P		
IC601	8-759-800-12	IC LA7920		
IC602	8-759-157-40	IC UPC574J		
IC701	8-759-805-20	IC LA7297		
IC801	8-752-807-92	IC CX5058H-186Q		
IC802	8-759-970-87	IC PST529F		
IC804	8-759-803-24	IC CXK1004L		
IC805	8-759-800-72	IC LA7205		
IC806 ⚠	8-759-802-32	IC LB1649		
IC901	8-759-142-00	IC UPD6163ACA-50X		
IC902	8-759-205-76	IC TC504013BP		
IC903	8-759-100-06	IC UPC4556C		
IC904	8-759-132-40	IC UPC324C		
IC905	8-759-132-40	IC UPC324C		
IC906 ⚠	8-759-801-27	IC L78M05		
		IF BLOCK		
⚠IFB601	1-464-478-21	IF BLOCK (IFB-450)		
		COIL		
L002	1-410-480-41	INDUCTOR	68UH	
L003	1-410-460-11	INDUCTOR	1.5UH	
L004	1-410-460-11	INDUCTOR	1.5UH	
L005	1-408-429-00	INDUCTOR	470UH	
L010	1-408-421-00	INDUCTOR	100UH	
L011	1-410-480-41	INDUCTOR	68UH	
L012	1-408-421-00	INDUCTOR	100UH	
L013	1-410-483-41	INDUCTOR	120UH	
L014	1-408-421-00	INDUCTOR	100UH	
L015	1-410-475-41	INDUCTOR	27UH	
L016	1-408-423-00	INDUCTOR	150UH	
L017	1-408-406-00	INDUCTOR	5.6UH	
L018	1-410-488-41	INDUCTOR	330UH	
L019	1-408-404-00	INDUCTOR	3.9UH	
L020	1-408-425-00	INDUCTOR	220UH	
L021	1-410-065-21	INDUCTOR	3.3MMH	
L023	1-408-424-00	INDUCTOR	180UH	
L040	1-408-413-00	INDUCTOR	22UH	
L041	1-408-411-00	INDUCTOR	15UH	
L042	1-410-482-31	INDUCTOR	100UH	
L602	1-408-411-00	INDUCTOR	15UH	
L603	1-408-421-00	INDUCTOR	100UH	
L604	1-408-421-00	INDUCTOR	100UH	
L605	1-408-425-00	INDUCTOR	220UH	
L701	1-410-091-31	INDUCTOR	22MMH	
L702	1-410-120-11	INDUCTOR	1.2MMH	
L703	1-410-093-11	INDUCTOR	33MMH	

Ref.No	Part No.	Description		Remark
L901	1-408-425-00	INDUCTOR	220UH	
		VARIABLE COIL		
LV001	1-408-512-00	COIL (VARIABLE)		
		INDICATOR TUBE		
ND801	1-519-420-11	INDICATOR TUBE, FLUORESCENT		
		TRANSISTOR		
Q002	8-729-117-54	TRANSISTOR 2SA1175		
Q004	8-729-178-54	TRANSISTOR 2SC2785		
Q005	8-729-178-54	TRANSISTOR 2SC2785		
Q006	8-729-806-20	TRANSISTOR 2SA1345		
Q007	8-729-806-38	TRANSISTOR 2SC3399		
Q008	9-986-159-01	TRANSISTOR 2SA1348		
Q009	8-729-904-34	TRANSISTOR DTA114TS		
Q011	8-729-178-54	TRANSISTOR 2SC2785		
Q012	8-729-178-54	TRANSISTOR 2SC2785		
Q020	8-729-178-54	TRANSISTOR 2SC2785		
Q021	8-729-117-54	TRANSISTOR 2SA1175		
Q022	8-729-178-54	TRANSISTOR 2SC2785		
Q023	8-729-806-38	TRANSISTOR 2SC3399		
Q024	8-729-806-34	TRANSISTOR 2SC3400		
Q026	8-729-178-54	TRANSISTOR 2SC2785		
Q027	9-986-159-01	TRANSISTOR 2SA1348		
Q028	8-729-117-54	TRANSISTOR 2SA1175		
Q029	8-729-178-54	TRANSISTOR 2SC2785		
Q030	8-729-178-54	TRANSISTOR 2SC2785		
Q031	8-729-117-54	TRANSISTOR 2SA1175		
Q032 ⚠	8-729-600-27	TRANSISTOR 2SC634SP		
Q033	8-729-117-54	TRANSISTOR 2SA1175		
Q034	8-729-801-83	TRANSISTOR 2SB1013		
Q036	8-729-806-34	TRANSISTOR 2SC3400		
Q037	9-986-159-01	TRANSISTOR 2SA1348		
Q038	8-729-117-54	TRANSISTOR 2SA1175		
Q045	8-729-178-54	TRANSISTOR 2SC2785		
Q601	8-729-603-50	TRANSISTOR 2SC403SP		
Q603	8-729-117-54	TRANSISTOR 2SA1175		
Q701	8-729-801-93	TRANSISTOR 2SD1387		
Q702	8-729-303-37	TRANSISTOR 2SD655-G		
Q801	8-729-117-54	TRANSISTOR 2SA1175		
Q802	8-729-806-38	TRANSISTOR 2SC3399		
Q805	8-729-806-30	TRANSISTOR 2SC4048		
Q806	8-729-806-32	TRANSISTOR 2SC3860		
Q901	8-729-178-54	TRANSISTOR 2SC2785		
Q902	8-729-806-38	TRANSISTOR 2SC3399		
Q903	8-729-806-38	TRANSISTOR 2SC3399		
Q905	8-729-178-54	TRANSISTOR 2SC2785		
Q906	8-729-178-54	TRANSISTOR 2SC2785		
Q907	8-729-117-54	TRANSISTOR 2SA1175		
Q908	8-729-806-38	TRANSISTOR 2SC3399		

When indicating parts by reference number, please include the board name.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

RESISTOR

Ref.No	Part No.	Description				Remark
R002	1-249-414-11	CARBON	560	5%	1/4W	
R003	1-249-437-11	CARBON	47K	5%	1/4W	
R004	1-249-410-11	CARBON	270	5%	1/4W	
R005	1-249-430-11	CARBON	12K	5%	1/4W	
R006	1-249-432-11	CARBON	18K	5%	1/4W	
R007	1-247-832-11	CARBON	1.1K	5%	1/4W	
R008	1-249-426-11	CARBON	5.6K	5%	1/4W	
R009	1-249-437-11	CARBON	47K	5%	1/4W	
R010	1-247-883-00	CARBON	150K	5%	1/4W	
R012	1-249-433-11	CARBON	22K	5%	1/4W	
R013	1-249-423-11	CARBON	3.3K	5%	1/4W	
R015	1-249-406-11	CARBON	120	5%	1/4W	
R016	1-249-423-11	CARBON	3.3K	5%	1/4W	
R017	1-249-432-11	CARBON	18K	5%	1/4W	
R018	1-249-421-11	CARBON	2.2K	5%	1/4W	
R019	1-249-413-11	CARBON	470	5%	1/4W	
R021	1-249-418-11	CARBON	1.2K	5%	1/4W	
R022	1-249-415-11	CARBON	680	5%	1/4W	
R023	1-249-412-11	CARBON	390	5%	1/4W	
R024	1-249-414-11	CARBON	560	5%	1/4W	
R025	1-247-832-11	CARBON	1.1K	5%	1/4W	
R026	1-249-434-11	CARBON	27K	5%	1/4W	
R027	1-249-437-11	CARBON	47K	5%	1/4W	
R028	1-249-422-11	CARBON	2.7K	5%	1/4W	
R029	1-249-417-11	CARBON	1K	5%	1/4W	
R030	1-249-417-11	CARBON	1K	5%	1/4W	
R031	1-249-426-11	CARBON	5.6K	5%	1/4W	
R032	1-249-419-11	CARBON	1.5K	5%	1/4W	
R033	1-249-425-11	CARBON	4.7K	5%	1/4W	
R034	1-249-425-11	CARBON	4.7K	5%	1/4W	
R035	1-249-410-11	CARBON	270	5%	1/4W	
R036	1-247-828-11	CARBON	750	5%	1/4W	
R037	1-249-407-11	CARBON	150	5%	1/4W	
R038	1-249-407-11	CARBON	150	5%	1/4W	
R040	1-249-425-11	CARBON	4.7K	5%	1/4W	
R041	1-249-408-11	CARBON	180	5%	1/4W	
R042	1-249-417-11	CARBON	1K	5%	1/4W	
R043	1-249-421-11	CARBON	2.2K	5%	1/4W	
R044	1-249-405-11	CARBON	100	5%	1/4W	
R045	1-249-428-11	CARBON	8.2K	5%	1/4W	
R046	1-249-417-11	CARBON	1K	5%	1/4W	
R047	1-249-412-11	CARBON	390	5%	1/4W	
R048	1-249-437-11	CARBON	47K	5%	1/4W	
R049	1-249-429-11	CARBON	10K	5%	1/4W	
R051	1-249-417-11	CARBON	1K	5%	1/4W	
R073	1-249-417-11	CARBON	1K	5%	1/4W	
R074	1-249-417-11	CARBON	1K	5%	1/4W	
R075	1-249-423-11	CARBON	3.3K	5%	1/4W	
R076	1-247-844-11	CARBON	3.6K	5%	1/4W	
R077	1-249-421-11	CARBON	2.2K	5%	1/4W	
R078	1-247-887-00	CARBON	220K	5%	1/4W	
R081	1-249-419-11	CARBON	1.5K	5%	1/4W	
R082	1-247-834-11	CARBON	1.3K	5%	1/4W	
R083	1-249-437-11	CARBON	47K	5%	1/4W	
R084	1-249-420-11	CARBON	1.8K	5%	1/4W	
R085	1-249-421-11	CARBON	2.2K	5%	1/4W	
R086	1-249-432-11	CARBON	18K	5%	1/4W	
R087	1-249-432-11	CARBON	18K	5%	1/4W	
R088	1-249-417-11	CARBON	1K	5%	1/4W	
R089	1-249-417-11	CARBON	1K	5%	1/4W	
R090	1-249-432-11	CARBON	18K	5%	1/4W	
R091	1-249-421-11	CARBON	2.2K	5%	1/4W	
R092	1-249-422-11	CARBON	2.7K	5%	1/4W	
R093	1-249-430-11	CARBON	12K	5%	1/4W	
R094	1-247-899-11	CARBON	680K	5%	1/4W	
R095	1-249-425-11	CARBON	4.7K	5%	1/4W	
R096	1-249-432-11	CARBON	18K	5%	1/4W	
R097	1-247-883-00	CARBON	150K	5%	1/4W	
R098	1-249-431-11	CARBON	15K	5%	1/4W	
R099	1-249-427-11	CARBON	6.8K	5%	1/4W	
R100	1-249-409-11	CARBON	220	5%	1/4W	
R101	1-249-415-11	CARBON	680	5%	1/4W	
R102	1-249-405-11	CARBON	100	5%	1/4W	
R103	1-249-415-11	CARBON	680	5%	1/4W	
R104	1-247-891-00	CARBON	330K	5%	1/4W	
R105	1-249-423-11	CARBON	3.3K	5%	1/4W	
R106	1-249-431-11	CARBON	15K	5%	1/4W	
R107	1-249-401-11	CARBON	47	5%	1/4W	
R108	1-249-429-11	CARBON	10K	5%	1/4W	
R109	1-249-434-11	CARBON	27K	5%	1/4W	
R110	1-247-881-00	CARBON	120K	5%	1/4W	
R111	1-249-417-11	CARBON	1K	5%	1/4W	
R112	1-249-421-11	CARBON	2.2K	5%	1/4W	
R113	1-247-883-00	CARBON	150K	5%	1/4W	
R115	1-249-416-11	CARBON	820	5%	1/4W	
R116	1-249-426-11	CARBON	5.6K	5%	1/4W	
R117	1-249-428-11	CARBON	8.2K	5%	1/4W	
R118	1-249-411-11	CARBON	330	5%	1/4W	
R119	1-249-416-11	CARBON	820	5%	1/4W	
R120	1-249-435-11	CARBON	33K	5%	1/4W	
R121	1-249-418-11	CARBON	1.2K	5%	1/4W	
R122	1-247-883-00	CARBON	150K	5%	1/4W	
R123	1-249-435-11	CARBON	33K	5%	1/4W	
R124	1-249-413-11	CARBON	470	5%	1/4W	
R125	1-249-409-11	CARBON	220	5%	1/4W	
R126	1-249-433-11	CARBON	22K	5%	1/4W	
R129	1-249-434-11	CARBON	27K	5%	1/4W	
R131	1-249-433-11	CARBON	22K	5%	1/4W	
R132	1-249-419-11	CARBON	1.5K	5%	1/4W	
R133	1-249-405-11	CARBON	100	5%	1/4W	
R134	1-249-405-11	CARBON	100	5%	1/4W	
R136	1-249-406-11	CARBON	120	5%	1/4W	
R137	1-249-429-11	CARBON	10K	5%	1/4W	
R138	1-249-437-11	CARBON	47K	5%	1/4W	

When indicating parts by reference number, please include the board name.

VS-33

Ref.No	Part No.	Description				Remark
R139	1-249-432-11	CARBON	18K	5%	1/4W	
R140	1-249-421-11	CARBON	2.2K	5%	1/4W	
R141	1-249-417-11	CARBON	1K	5%	1/4W	
R142	1-249-435-11	CARBON	33K	5%	1/4W	
R143	1-249-435-11	CARBON	33K	5%	1/4W	
R144	1-249-423-11	CARBON	3.3K	5%	1/4W	
R145	1-249-421-11	CARBON	2.2K	5%	1/4W	
R146	1-247-891-00	CARBON	330K	5%	1/4W	
R147	1-247-883-00	CARBON	150K	5%	1/4W	
R148	1-249-416-11	CARBON	820	5%	1/4W	
R149	1-247-883-00	CARBON	150K	5%	1/4W	
R150	1-247-891-00	CARBON	330K	5%	1/4W	
R151	1-249-429-11	CARBON	10K	5%	1/4W	
R152	1-249-423-11	CARBON	3.3K	5%	1/4W	
R153	1-247-883-00	CARBON	150K	5%	1/4W	
R154	1-247-885-00	CARBON	180K	5%	1/4W	
R155	1-249-424-11	CARBON	3.9K	5%	1/4W	
R156	1-249-417-11	CARBON	1K	5%	1/4W	
R157	1-249-419-11	CARBON	1.5K	5%	1/4W	
R158	1-249-417-11	CARBON	1K	5%	1/4W	
R159	1-249-417-11	CARBON	1K	5%	1/4W	
R160	1-249-413-11	CARBON	470	5%	1/4W	
R161	1-249-441-11	CARBON	100K	5%	1/4W	
R162	1-249-408-11	CARBON	180	5%	1/4W	
R163	1-249-424-11	CARBON	3.9K	5%	1/4W	
R164	1-249-435-11	CARBON	33K	5%	1/4W	
R165	1-249-424-11	CARBON	3.9K	5%	1/4W	
R166	1-249-421-11	CARBON	2.2K	5%	1/4W	
R167	1-249-437-11	CARBON	47K	5%	1/4W	
R168	1-249-442-11	CARBON	510	5%	1/4W	
R169	1-249-417-11	CARBON	1K	5%	1/4W	
R170	1-249-421-11	CARBON	2.2K	5%	1/4W	
R171	1-249-435-11	CARBON	33K	5%	1/4W	
R172	1-249-411-11	CARBON	330	5%	1/4W	
R173	1-249-423-11	CARBON	3.3K	5%	1/4W	
R174	1-249-411-11	CARBON	330	5%	1/4W	
R175	1-249-411-11	CARBON	330	5%	1/4W	
R176 ⚠	1-247-691-11	CARBON	18	5%	1/4W	F
R177	1-249-419-11	CARBON	1.5K	5%	1/4W	
R178	1-249-423-11	CARBON	3.3K	5%	1/4W	
R179	1-249-429-11	CARBON	10K	5%	1/4W	
R180	1-249-415-11	CARBON	680	5%	1/4W	
R181	1-249-407-11	CARBON	150	5%	1/4W	
R182	1-249-406-11	CARBON	120	5%	1/4W	
R186	1-249-403-11	CARBON	68	5%	1/4W	
R187	1-247-804-11	CARBON	75	5%	1/4W	
R206	1-249-424-11	CARBON	3.9K	5%	1/4W	
R207	1-249-433-11	CARBON	22K	5%	1/4W	
R211	1-247-804-11	CARBON	75	5%	1/4W	
R212	1-247-883-00	CARBON	150K	5%	1/4W	
R214	1-249-412-11	CARBON	390	5%	1/4W	
R230	1-249-430-11	CARBON	12K	5%	1/4W	
R231	1-249-430-11	CARBON	12K	5%	1/4W	
R232	1-249-422-11	CARBON	2.7K	5%	1/4W	
R233	1-249-417-11	CARBON	1K	5%	1/4W	
R234	1-247-862-11	CARBON	20K	5%	1/4W	
R235	1-249-421-11	CARBON	2.2K	5%	1/4W	
R238	1-249-418-11	CARBON	1.2K	5%	1/4W	
R240	1-249-418-11	CARBON	1.2K	5%	1/4W	
R241	1-249-411-11	CARBON	330	5%	1/4W	
R244	1-249-432-11	CARBON	18K	5%	1/4W	
R245	1-249-424-11	CARBON	3.9K	5%	1/4W	
R246	1-249-406-11	CARBON	120	5%	1/4W	
R247	1-249-421-11	CARBON	2.2K	5%	1/4W	
R250	1-249-413-11	CARBON	470	5%	1/4W	
R601	1-249-423-11	CARBON	3.3K	5%	1/4W	
R602	1-247-883-00	CARBON	150K	5%	1/4W	
R603	1-249-428-11	CARBON	8.2K	5%	1/4W	
R604	1-249-423-11	CARBON	3.3K	5%	1/4W	
R605	1-249-438-11	CARBON	56K	5%	1/4W	
R606	1-249-438-11	CARBON	56K	5%	1/4W	
R614	1-249-417-11	CARBON	1K	5%	1/4W	
R615	1-249-429-11	CARBON	10K	5%	1/4W	
R616	1-249-417-11	CARBON	1K	5%	1/4W	
R617	1-249-416-11	CARBON	820	5%	1/4W	
R618	1-249-429-11	CARBON	10K	5%	1/4W	
R619	1-249-429-11	CARBON	10K	5%	1/4W	
R620	1-249-429-11	CARBON	10K	5%	1/4W	
R621	1-249-433-11	CARBON	22K	5%	1/4W	
R622	1-249-433-11	CARBON	22K	5%	1/4W	
R623	1-249-433-11	CARBON	22K	5%	1/4W	
R624	1-249-437-11	CARBON	47K	5%	1/4W	
R625	1-249-437-11	CARBON	47K	5%	1/4W	
R626	1-249-432-11	CARBON	18K	5%	1/4W	
R627	1-249-410-11	CARBON	270	5%	1/4W	
R628	1-249-437-11	CARBON	47K	5%	1/4W	
R629	1-249-417-11	CARBON	1K	5%	1/4W	
R630	1-249-405-11	CARBON	100	5%	1/4W	
R631	1-249-405-11	CARBON	100	5%	1/4W	
R701	1-249-429-11	CARBON	10K	5%	1/4W	
R702	1-249-429-11	CARBON	10K	5%	1/4W	
R703	1-249-431-11	CARBON	15K	5%	1/4W	
R704	1-249-387-11	CARBON	3.3	5%	1/4W	
R705	1-249-393-11	CARBON	10	5%	1/4W	
R706	1-249-429-11	CARBON	10K	5%	1/4W	
R707	1-249-439-11	CARBON	68K	5%	1/4W	
R708	1-249-421-11	CARBON	2.2K	5%	1/4W	
R709	1-249-421-11	CARBON	2.2K	5%	1/4W	
R710	1-249-416-11	CARBON	820	5%	1/4W	
R711	1-249-410-11	CARBON	270	5%	1/4W	
R712	1-249-430-11	CARBON	12K	5%	1/4W	
R713	1-247-889-00	CARBON	270K	5%	1/4W	
R714	1-249-414-11	CARBON	560	5%	1/4W	
R715	1-249-425-11	CARBON	4.7K	5%	1/4W	
R716	1-247-852-11	CARBON	7.5K	5%	1/4W	
R717	1-249-423-11	CARBON	3.3K	5%	1/4W	

When indicating parts by reference number, please include the board name.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Ref.No	Part No.	Description				Remark
R718	1-249-418-11	CARBON	1.2K	5%	1/4W	
R719	1-249-435-11	CARBON	33K	5%	1/4W	
R720	1-249-414-11	CARBON	560	5%	1/4W	
R721	1-247-903-00	CARBON	1M	5%	1/4W	
R722	1-249-437-11	CARBON	47K	5%	1/4W	
R723	1-249-429-11	CARBON	10K	5%	1/4W	
R724	1-249-432-11	CARBON	18K	5%	1/4W	
R725	1-249-413-11	CARBON	470	5%	1/4W	
R726	1-249-427-11	CARBON	6.8K	5%	1/4W	
R727	1-249-414-11	CARBON	560	5%	1/4W	
R801	1-249-429-11	CARBON	10K	5%	1/4W	
R802	1-249-431-11	CARBON	15K	5%	1/4W	
R803	1-249-405-11	CARBON	100	5%	1/4W	
R804	1-247-887-00	CARBON	220K	5%	1/4W	
R805	1-249-425-11	CARBON	4.7K	5%	1/4W	
R806	1-249-434-11	CARBON	27K	5%	1/4W	
R807	1-249-441-11	CARBON	100K	5%	1/4W	
R808	1-247-883-00	CARBON	150K	5%	1/4W	
R809	1-249-431-11	CARBON	15K	5%	1/4W	
R810	1-249-431-11	CARBON	15K	5%	1/4W	
R811	1-249-431-11	CARBON	15K	5%	1/4W	
R812	1-249-431-11	CARBON	15K	5%	1/4W	
R813	1-249-433-11	CARBON	22K	5%	1/4W	
R814	1-249-433-11	CARBON	22K	5%	1/4W	
R815	1-249-438-11	CARBON	56K	5%	1/4W	
R816	1-249-417-11	CARBON	1K	5%	1/4W	
R817	1-249-429-11	CARBON	10K	5%	1/4W	
R818	1-249-429-11	CARBON	10K	5%	1/4W	
R819	1-249-429-11	CARBON	10K	5%	1/4W	
R820	1-249-429-11	CARBON	10K	5%	1/4W	
R821	1-249-429-11	CARBON	10K	5%	1/4W	
R823	1-249-421-11	CARBON	2.2K	5%	1/4W	
R824	1-249-424-11	CARBON	3.9K	5%	1/4W	
R825	1-249-424-11	CARBON	3.9K	5%	1/4W	
R826	1-249-424-11	CARBON	3.9K	5%	1/4W	
R827	1-249-424-11	CARBON	3.9K	5%	1/4W	
R828	1-249-435-11	CARBON	33K	5%	1/4W	
R829	1-249-438-11	CARBON	56K	5%	1/4W	
R831	⚠1-215-905-11	METAL OXIDE	10	5%	3W	F
R832	1-249-415-11	CARBON	680	5%	1/4W	
R850	1-249-419-11	CARBON	1.5K	5%	1/4W	
R851	1-249-425-11	CARBON	4.7K	5%	1/4W	
R902	1-249-429-11	CARBON	10K	5%	1/4W	
R904	1-249-416-11	CARBON	820	5%	1/4W	
R905	1-249-439-11	CARBON	68K	5%	1/4W	
R906	1-249-439-11	CARBON	68K	5%	1/4W	
R907	1-249-429-11	CARBON	10K	5%	1/4W	
R908	1-249-432-11	CARBON	18K	5%	1/4W	
R909	1-249-431-11	CARBON	15K	5%	1/4W	
R910	1-247-895-00	CARBON	470K	5%	1/4W	
R911	1-249-415-11	CARBON	680	5%	1/4W	
R912	1-249-413-11	CARBON	470	5%	1/4W	
R913	1-247-897-11	CARBON	560K	5%	1/4W	

Ref.No	Part No.	Description				Remark
R914	1-247-897-11	CARBON	560K	5%	1/4W	
R915	1-249-437-11	CARBON	47K	5%	1/4W	
R916	1-249-437-11	CARBON	47K	5%	1/4W	
R917	1-247-891-00	CARBON	330K	5%	1/4W	
R918	1-247-891-00	CARBON	330K	5%	1/4W	
R919	1-247-897-11	CARBON	560K	5%	1/4W	
R920	1-247-897-11	CARBON	560K	5%	1/4W	
R921	1-249-429-11	CARBON	10K	5%	1/4W	
R922	1-249-440-11	CARBON	82K	5%	1/4W	
R923	1-215-461-00	METAL	47K	1%	1/6W	
R924	1-215-461-00	METAL	47K	1%	1/6W	
R925	1-249-429-11	CARBON	10K	5%	1/4W	
R926	1-249-441-11	CARBON	100K	5%	1/4W	
R927	1-249-429-11	CARBON	10K	5%	1/4W	
R928	1-249-430-11	CARBON	12K	5%	1/4W	
R929	1-215-453-00	METAL	22K	1%	1/6W	
R930	1-215-453-00	METAL	22K	1%	1/6W	
R931	1-247-887-00	CARBON	220K	5%	1/4W	
R932	1-249-435-11	CARBON	33K	5%	1/4W	
R933	1-249-429-11	CARBON	10K	5%	1/4W	
R934	1-247-895-00	CARBON	470K	5%	1/4W	
R935	1-249-437-11	CARBON	47K	5%	1/4W	
R936	⚠.1-216-349-00	METAL OXIDE	1	5%	1W	F
R937	1-247-903-00	CARBON	1M	5%	1/4W	
R938	1-249-429-11	CARBON	10K	5%	1/4W	
R939	1-249-438-11	CARBON	56K	5%	1/4W	
R940	1-249-417-11	CARBON	1K	5%	1/4W	
R941	1-247-891-00	CARBON	330K	5%	1/4W	
R942	1-249-438-11	CARBON	56K	5%	1/4W	
R943	1-249-421-11	CARBON	2.2K	5%	1/4W	
R944	1-247-881-00	CARBON	120K	5%	1/4W	
R945	1-247-903-00	CARBON	1M	5%	1/4W	
R946	1-249-413-11	CARBON	470	5%	1/4W	
R947	1-249-431-11	CARBON	15K	5%	1/4W	
R948	1-249-438-11	CARBON	56K	5%	1/4W	
R949	1-249-417-11	CARBON	1K	5%	1/4W	
R950	1-249-429-11	CARBON	10K	5%	1/4W	
R951	1-247-895-00	CARBON	470K	5%	1/4W	
R953	1-249-413-11	CARBON	470	5%	1/4W	
R954	1-249-425-11	CARBON	4.7K	5%	1/4W	
R955	1-249-429-11	CARBON	10K	5%	1/4W	
R956	1-249-425-11	CARBON	4.7K	5%	1/4W	
R957	1-249-433-11	CARBON	22K	5%	1/4W	
R958	1-249-423-11	CARBON	3.3K	5%	1/4W	
R959	1-249-441-11	CARBON	100K	5%	1/4W	
R960	1-249-425-11	CARBON	4.7K	5%	1/4W	
R961	1-249-431-11	CARBON	15K	5%	1/4W	
R962	1-247-899-11	CARBON	680K	5%	1/4W	
R963	1-249-421-11	CARBON	2.2K	5%	1/4W	
R964	1-249-397-11	CARBON	22	5%	1/4W	
R997	1-249-433-11	CARBON	22K	5%	1/4W	
R998	1-249-429-11	CARBON	10K	5%	1/4W	
R999	1-249-421-11	CARBON	2.2K	5%	1/4W	

When indicating parts by reference number, please include the board name.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

VS-33 PS-197 VS-36 MF-40

VARIABLE RESISTOR

Ref.No	Part No.	Description	Remark
RV001	1-228-989-00	RES, ADJ, CARBON 470	
RV002	1-228-993-00	RES, ADJ, CARBON 4.7K	
RV004	1-228-991-00	RES, ADJ, CARBON 2.2K	
RV005	1-228-993-00	RES, ADJ, CARBON 4.7K	
RV007	1-228-989-00	RES, ADJ, CARBON 470	
RV008	1-228-996-00	RES, ADJ, CARBON 47K	
RV010	1-228-996-00	RES, ADJ, CARBON 47K	
RV011	1-228-994-00	RES, ADJ, CARBON 10K	
RV012	1-228-990-00	RES, ADJ, CARBON 1K	
RV701	1-228-998-00	RES, ADJ, CARBON 220K	
RV901	1-228-997-00	RES, ADJ, CARBON 100K	
RV902	1-228-997-00	RES, ADJ, CARBON 100K	

TRANSFORMER

Ref.No	Part No.	Description	Remark
T001	1-426-305-11	TRANSFORMER, EQUALIZER	
T601	1-409-418-11	COIL	
T701	1-433-319-11	TRANSFORMER, BIAS OSCILLATION	

TUNER

Ref.No	Part No.	Description	Remark
TU601	⚠.1-463-829-11	TUNER, ET (BT-868S)	

CRYSTAL

Ref.No	Part No.	Description	Remark
X001	1-567-505-11	OSCILLATOR, CRYSTAL (3.58MHz)	

****

*A-6723-388-A PS-197 BOARD, COMPLETE (SL-S505)
****
(Including the VS-36 BOARD)

*A-6723-389-A PS-197 BOARD, COMPLETE (SL-340)
****

*A-6723-380-A PS-197 BOARD, COMPLETE (SL-S500)
****

Ref.No	Part No.	Description	Remark
	*1-533-189-11	HOLDER, FUSE	
	*3-701-947-13	LABEL, FUSE (SL-S505)	
	*3-701-947-16	LABEL, FUSE (SL-S505)	

CAPACITOR

Ref.No	Part No.	Description	Remark
C001	1-124-772-11	ELECT 10000MF 20% 25V	
C002	1-124-477-11	ELECT 47MF 20% 16V	
C003	1-126-101-11	ELECT 100MF 20% 16V	
C004	1-126-101-11	ELECT 100MF 20% 16V	
C005	1-124-477-11	ELECT 47MF 20% 16V	
C006	1-164-159-11	CERAMIC 0.1MF 50V (SL-340/S500)	
C100	⚠.1-136-345-11	FILM 0.1MF 20% 125V (SL-340/S500)	
C101	⚠.1-136-345-21	FILM 0.1MF 20% 300V (SL-S505)	

CONNECTOR

Ref.No	Part No.	Description	Remark
CN001	*1-560-898-00	PIN, CONNECTOR 10P	

DIODE

Ref.No	Part No.	Description	Remark
D001	⚠.8-719-200-77	DIODE 10E2N	
D002	⚠.8-719-200-77	DIODE 10E2N	
D003	⚠.8-719-200-77	DIODE 10E2N	
D004	⚠.8-719-200-77	DIODE 10E2N	

FUSE

Ref.No	Part No.	Description	Remark
F001	⚠.*1-532-742-11	FUSE, GLASS TUBE(1.6A/125V)(SL-340/S500)	
F001	⚠.*1-532-259-11	FUSE, GLASS TUBE (T1.6A/250V) (SL-S505)	
F002	⚠.*1-532-745-11	FUSE, GLASS TUBE (3.15A/125V) (SL-340/S500)	
F002	⚠.*1-532-237-11	FUSE, GLASS TUBE (T3.15A/250V) (SL-S505)	

IC

Ref.No	Part No.	Description	Remark
IC001	⚠.8-749-900-85	IC STK5478	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q001	8-729-806-28	TRANSISTOR 2SC3402	
Q002	8-729-178-54	TRANSISTOR 2SC2785	

RESISTOR

Ref.No	Part No.	Description	Remark
R001	⚠.1-212-958-00	FUSIBLE 10 5% 1/2W	F
R002	1-249-415-11	METAL 680 5% 1/4W	
R003	1-249-422-11	METAL 2.7K 5% 1/4W	
R004	1-247-708-11	CARBON 470 5% 1/4W	
R005	1-247-708-11	CARBON 470 5% 1/4W	
R006	1-249-419-11	METAL 1.5K 5% 1/4W	
R007	1-249-414-11	METAL 560 5% 1/4W	
R008	1-249-433-11	METAL 22K 5% 1/4W	
R100	1-202-729-00	SOLID 6.8M 10% 1/2W (SL-340)	

****

*1-628-422-11 VS-36 BOARD (SL-S505)
****

VOLTAGE SELECTOR

Ref.No	Part No.	Description	Remark
S001	⚠.1-571-069-11	SELECTOR, POWER VOLTAGE	

****

*1-628-157-11 MF-40 BOARD
****

CONNECTOR

Ref.No	Part No.	Description	Remark
B201	1-565-777-11	CONNECTOR, BOARD TO BOARD 7P	

CONNECTOR

Ref.No	Part No.	Description	Remark
CN201	*1-563-626-11	CONNECTOR, FLEXIBLE 23P	

DIODE

Ref.No	Part No.	Description	Remark
D202	8-719-802-02	DIODE TLY113AP	
D203	8-719-802-02	DIODE TLY113AP	
D204	8-719-802-02	DIODE TLY113AP	
D205	8-719-940-99	DIODE SLR-34VC3	
D207	8-719-940-82	DIODE SLR-34MC3	
D208	8-719-940-82	DIODE SLR-34MC3	
D210	8-719-955-04	DIODE PY5504S-1	

IC

Ref.No	Part No.	Description	Remark
IC201	8-749-920-52	IC HC107	

RESISTOR

Ref.No	Part No.	Description	Remark
R205	1-249-417-11	METAL 1K 5% 1/4W	
R206	1-249-420-11	METAL 1.8K 5% 1/4W	
R207	1-249-423-11	METAL 3.3K 5% 1/4W	
R208	1-249-429-11	METAL 10K 5% 1/4W	
R209	1-249-417-11	METAL 1K 5% 1/4W	
R210	1-249-420-11	METAL 1.8K 5% 1/4W	
R211	1-249-423-11	METAL 3.3K 5% 1/4W	
R212	1-249-429-11	METAL 10K 5% 1/4W	

When indicating parts by reference number, please include the board name.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Ref.No	Part No.	Description				Remark
R213	1-249-417-11	METAL	1K	5%	1/4W	
R214	1-249-420-11	METAL	1.8K	5%	1/4W	
R215	1-249-423-11	METAL	3.3K	5%	1/4W	
R216	1-249-429-11	METAL	10K	5%	1/4W	
R217	1-249-420-11	METAL	1.8K	5%	1/4W	
R218	1-249-423-11	METAL	3.3K	5%	1/4W	
R219	1-249-429-11	METAL	10K	5%	1/4W	
R225	1-249-403-11	METAL	68	5%	1/4W	
R226	1-249-403-11	METAL	68	5%	1/4W	
R227	1-249-403-11	METAL	68	5%	1/4W	
R228	1-249-397-11	METAL	22	5%	1/4W	
R229	1-249-413-11	METAL	470	5%	1/4W	
R230	1-249-417-11	METAL	1K	5%	1/4W	
R231	1-249-417-11	METAL	1K	5%	1/4W	

SWITCH

S201	1-553-856-00	SWITCH, KEY BOARD (PRESET)
S202	1-553-856-00	SWITCH, KEY BOARD (FINE)
S203	1-553-856-00	SWITCH, KEY BOARD (CLOCK)
S204	1-553-856-00	SWITCH, KEY BOARD (TIMER SET/CHECK)
S205	1-553-856-00	SWITCH, KEY BOARD (NEXT)
S206	1-553-856-00	SWITCH, KEY BOARD (■)
S207	1-553-856-00	SWITCH, KEY BOARD (▶▶)
S208	1-553-856-00	SWITCH, KEY BOARD (▷)
S209	1-553-856-00	SWITCH, KEY BOARD (• REC)
S210	1-553-856-00	SWITCH, KEY BOARD (REC MODE β II /III)
S211	1-553-856-00	SWITCH, KEY BOARD (◀◀)
S212	1-553-856-00	SWITCH, KEY BOARD (❚❚)
S213	1-553-856-00	SWITCH, KEY BOARD (CLEAR/RESET)
S214	1-553-856-00	SWITCH, KEY BOARD (CHANNEL +)
S215	1-553-856-00	SWITCH, KEY BOARD (TIMER REC ON/OFF)
S216	1-553-856-00	SWITCH, KEY BOARD (TV/VTR)
S217	1-553-856-00	SWITCH, KEY BOARD (CLOCK/COUNTER)
S218	1-553-856-00	SWITCH, KEY BOARD (CHANNEL -)
S219	1-570-338-11	SWITCH, SLIDE (SUPER BETA)
S220	1-570-338-21	SWITCH, SLIDE (COLOR)

****

*1-628-156-11 MF-39 BOARD
****

CONNECTOR

B202	1-565-777-11	CONNECTOR, BOARD TO BOARD 7P

DIODE

D201	8-719-940-82	DIODE SLR-34MC3

RESISTOR

R222	1-247-854-11	METAL	9.1K	5%	1/4W
R223	1-249-417-11	METAL	1K	5%	1/4W
R224	1-249-413-11	METAL	470	5%	1/4W
R233	1-249-432-11	METAL	18K	5%	1/4W

Ref.No	Part No.	Description	Remark

VARIABLE RESISTOR

RV201	1-238-304-11	RES, VAR, SLIDE 10K (SHARPNESS)
RV202	1-238-305-11	RES, VAR, SLIDE 100K (TRACKING)

SWITCH

S221	1-553-856-00	SWITCH, KEY BOARD (⏏)
S222	1-553-856-00	SWITCH, KEY BOARD (POWER ON/OFF)

****

*A-6783-393-A RP BLOCK ASSY (RP-67 BOARD)
****

CONNECTOR

B301	1-942-452-11	HARNESS (RF-42)

CAPACITOR

C301	1-161-379-00	CERAMIC	0.01MF	30%	16V
C302	1-161-379-00	CERAMIC	0.01MF	30%	16V
C303	1-164-159-11	CERAMIC	0.1MF		50V
C304	1-161-379-00	CERAMIC	0.01MF	30%	16V
C305	1-161-379-00	CERAMIC	0.01MF	30%	16V
C306	1-164-159-11	CERAMIC	0.1MF		50V
C307	1-161-379-00	CERAMIC	0.01MF	30%	16V
C308	1-161-379-00	CERAMIC	0.01MF	30%	16V
C309	1-161-379-00	CERAMIC	0.01MF	30%	16V
C311	1-123-611-00	ELECT	1MF	20%	50V
C312	1-162-215-31	CERAMIC	47PF	5%	50V
C313	1-162-209-31	CERAMIC	27PF	5%	50V
C315	1-124-589-11	ELECT	47MF	20%	10V
C316	1-161-379-00	CERAMIC	0.01MF	30%	16V
C317	1-126-154-11	ELECT	47MF	20%	6.3V
C318	1-161-379-00	CERAMIC	0.01MF	30%	16V
C319	1-124-589-11	ELECT	47MF	20%	16V
C320	1-161-379-00	CERAMIC	0.01MF	30%	16V
C321	1-164-068-11	CERAMIC	82PF	5%	50V
C322	1-164-081-11	CERAMIC	470PF	10%	50V
C323	1-162-218-31	CERAMIC	62PF	5%	50V
C324	1-161-379-00	CERAMIC	0.01MF	30%	16V
C325	1-161-379-00	CERAMIC	0.01MF	30%	16V
C326	1-161-379-00	CERAMIC	0.01MF	30%	16V
C327	1-161-379-00	CERAMIC	0.01MF	30%	16V
C329	1-162-211-11	CERAMIC	33PF		50V
C351	1-161-379-00	CERAMIC	0.01MF	30%	16V
C352	1-161-379-00	CERAMIC	0.01MF	30%	16V

CONNECTOR

CN301	*1-560-894-00	PIN, CONNECTOR 6P
CN302	*1-564-029-00	PIN, CONNECTOR 4P

DIODE

D301	8-719-911-19	DIODE 1SS119

When indicating parts by reference number, please include the board name.

RP BLOCK ASSY | DR-50 | TJ-4 | GM-8

Ref.No	Part No.	Description	Remark
		IC	
IC301	8-759-820-98	IC LA7320	
		COIL	
L301	1-410-511-21	INDUCTOR 15UH	
L302	1-410-509-11	INDUCTOR 10UH	
L303	1-410-334-11	INDUCTOR 100UH	
L304	1-408-421-00	INDUCTOR 100UH	
L305	1-410-522-11	INDUCTOR 120UH	
L306	1-410-511-21	INDUCTOR 15UH	
L307	1-410-525-11	INDUCTOR 220UH	
		TRANSISTOR	
Q301	8-729-178-54	TRANSISTOR 2SC2785	
Q302	8-729-178-54	TRANSISTOR 2SC2785	
Q303	⚠8-729-178-54	TRANSISTOR 2SC2785	
Q304	8-729-806-28	TRANSISTOR 2SC3402	
Q305	8-729-178-54	TRANSISTOR 2SC2785	
Q306	8-729-806-34	TRANSISTOR 2SC3400	
Q307	8-729-806-34	TRANSISTOR 2SC3400	
Q351	8-729-178-54	TRANSISTOR 2SC2785	
		RESISTOR	
R302	1-249-408-11	METAL 180 5% 1/4W	
R303	1-247-814-11	METAL 200 5% 1/4W	
R304	1-249-436-11	METAL 39K 5% 1/4W	
R305	1-249-427-11	METAL 6.8K 5% 1/4W	
R306	1-249-421-11	METAL 2.2K 5% 1/4W	
R307	1-249-416-11	METAL 820 5% 1/4W	
R308	1-249-411-11	METAL 330 5% 1/4W	
R310	1-249-423-11	METAL 3.3K 5% 1/4W	
R311	1-247-846-11	METAL 4.3K 5% 1/4W	
R312	1-249-427-11	METAL 6.8K 5% 1/4W	
R313	1-249-429-11	METAL 10K 5% 1/4W	
R314	1-249-429-11	METAL 10K 5% 1/4W	
R315	1-249-405-11	METAL 100 5% 1/4W	
R316	1-249-416-11	METAL 820 5% 1/4W	
R317	1-249-406-11	METAL 120 5% 1/4W	
R318	1-249-429-11	METAL 10K 5% 1/4W	
R319	1-249-417-11	METAL 1K 5% 1/4W	
R320	⚠.1-249-405-11	CARBON 100 5% 1/4W	F
R321	1-249-429-11	METAL 10K 5% 1/4W	
R351	1-249-434-11	CARBON 27K 5% 1/4W	
R352	1-249-432-11	CARBON 18K 5% 1/4W	
R353	1-249-425-11	CARBON 4.7K 5% 1/4W	
R354	1-249-434-11	CARBON 27K 5% 1/4W	
		VARIABLE RESISTOR	
RV301	1-230-720-11	RES, ADJ, CARBON 4.7K	
RV302	1-230-720-11	RES, ADJ, CARBON 4.7K	

****

Ref.No	Part No.	Description	Remark
	*1-628-154-11	DR-50 BOARD ************	
		TRANSISTOR	
Q910	⚠8-729-107-26	TRANSISTOR 2SD1585-K	

****

Ref.No	Part No.	Description	Remark
	*1-628-618-11	TJ-4 board *******	
		CAPACITOR	
C501	1-161-051-00	CERAMIC 0.01MF 10% 25V	
C502	1-161-379-00	CERAMIC 0.01MF 30% 16V	
C503	1-161-379-00	CERAMIC 0.01MF 30% 16V	
C504	1-131-377-91	TANTAL 10MF 10% 10V	
		IC	
IC501	8-759-202-18	IC TC74HC 20P	
IC502	8-759-618-48	IC M51848L	
		TRANSISTOR	
Q501	8-729-900-65	TRANSISTOR DTA144ES	
Q502	8-729-904-39	TRANSISTOR DTA144TS	
		RESISTOR	
R503	1-249-429-11	CARBON 10K 5% 1/4W	
R504	1-249-397-11	CARBON 22 5% 1/4W	
R505	1-247-887-81	CARBON 220K 5% 1/4W	

* *

Ref.No	Part No.	Description	Remark
	*1-628-742-11	GM-8 board *******	
		CAPACITOR	
C551	1-131-377-91	TANTAL 10MF 10% 10V	
C552	1-161-379-00	CERAMIC 0.01MF 30% 16V	
		DIODE	
D551	8-719-921-19	DIODE 1SS119TG	
		IC	
IC551	8-759-240-11	IC TC4011BP	
		TRANSISTOR	
Q551	8-729-900-65	TRANSISTOR DTA144ES	
		RESISTOR	
R551	1-247-881-81	CARBON 120K 5% 1/4W	
R552	1-249-417-11	CARBON 1K 5% 1/4W	

* *

SYSCON CPU BOARD	SYSTEM CONTROL MICRO COMPUTER VERSION	
	CXP5058H −154Q	CXP5058H −186Q and later
TJ-4 GM-8	Attached	None

When indicating parts by reference number, please include the board name.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

HARDWARE LIST

MISCELLANEOUS
****

Ref.No	Part No.	Description	Remark
	⚠1-464-782-11	MODULATOR, RF (RFU-784)	
	⚠1-551-908-61	CORD, POWER (SL-S505)	
	⚠1-559-129-11	CORD, POWER (WITH CORD BUSHING) (SL-340/S505)	
	1-565-775-11	CONNECTOR, BOARD TO BOARD 7P	
	8-825-508-61	HEAD, FULL ERASE	
F001	⚠1-532-742-11	FUSE, GLASS TUBE (1.6A/125V)	
F002	⚠1-532-745-11	FUSE, GLASS TUBE (3.15A/125V)	
L901	1-464-781-11	SENSOR, COIL	
L902	X-3716-014-1	SENSOR ASSY, T	
M901	1-541-615-11	MOTOR, DC (E20EL42) (DRUM)	
M902	8-835-334-01	MOTOR, DC BHF-1917B (CAPSTAN)	
M903	1-541-309-11	MOTOR, L (RF-370C) (CAM)	
M904	X-3716-074-1	MOTOR ASSY, L (LOADING)	
S901	1-571-023-11	SWITCH, LEAF (2 GANG) (CASSETTE DOWN/REC PROOF)	
S902	1-571-024-11	SWITCH, ROTARY (ENCODER)	
T001	⚠1-448-866-11	TRANSFORMER, POWER (SL-340/S500)	
T001	⚠1-448-923-11	TRANSFORMER, POWER (SL-S505)	

****

ACCESSORIES AND PACKING MATERIALS
****

Part No.	Description	Remark
1-417-139-11	MATCHING TRANSFORMER, ANTENNA (SL-340)	
1-463-845-12	REMOTE COMMANDER RMT-156	
1-506-401-00	ADAPTOR, CONVERSION (SL-S505)	
1-513-379-00	CONVERTER (EAC-25) (SL-S500/S505)	
1-558-076-41	CORD, CONNECTION	
*3-723-189-01	INDIVIDUAL CARTON (SL-S500)	
*3-723-189-11	INDIVIDUAL CARTON (SL-S505)	
*3-723-189-21	INDIVIDUAL CARTON (SL-340)	
*3-723-193-01	CUSHION (UPPER)	
*3-723-194-01	CUSHION (LOWER)	
*3-694-922-01	SHEET, PROTECTION	
3-764-705-61	INSTRUCTION, POWER CAUTION (SL-S505)	
3-786-453-21	MANUAL, INSTRUCTION (ENGLISH) (SL-340)	
3-786-453-41	MANUAL, INSTRUCTION (ENGLISH, SPANISH) (SL-S500)	
3-786-453-51	MANUAL, INSTRUCTION (ENGLISH, SPANISH) (SL-S505)	

****

HARDWARE LIST
****

Ref.No	Part No.	Description	Remark
		STOP RING	
	7-624-101-01	STOP RING 1.2 (E TYPE)	
	7-624-105-04	STOP RING 2.3, TYPE -E	
		SCREW	
	7-627-552-58	SCREW, PRECISION +P 1.7X5	
	7-627-554-07	SCREW, PRECISION +P 2X2.2	
	7-628-254-00	SCREW +PS 2.6X5	
	7-682-645-01	SCREW +PS 3X4	
	7-682-647-09	SCREW +PS 3X6	
	7-685-645-79	SCREW +P 3X6 TYPE2 NON-SLIT	
	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3	
	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3	
	7-685-646-79	SCREW +BVTP 3X8 TYPE2	
	7-685-647-79	SCREW +BVTP 3X10 TYPE2 IT-3	
	7-685-647-79	SCREW +BVTP 3X10 TYPE2	
	7-685-650-79	SCREW +BVTP 3X16 TYPE2 IT-3	
	7-685-650-79	SCREW +BVTP 3X16 TYPE2	
		SET-SCREW	
	7-683-174-21	SET-SCREW, SLOT 3X4 CONE POINT	

When indicating parts by reference number, please include the board name.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

SECTION 7
MECHANICAL ADJUSTMENTS

Refer to mechanical adjustment manual for the adjustments and checks of mechanism section and the mechanical parts replacement.

7-1. REMOVAL OF THE ROTARY HEAD DISK ASSEMBLY

1) Remove the two precision screws (P2×3) ❶, and remove the damper assembly ❷.
2) Remove the hexagonal socket bolt (3×8) ❸ with an allen wrench and remove the upper drum assembly ❹ according to the section 3) of "3-4. REPLACEMENT OF THE DRUM ASSEMBLY".
3) Unsolder ❻ the rotary head disk assembly ❺ relay board (red and white leads, 4 locations).
4) Remove the two hexagonal socket bolts (2.6×8) ❼ and the rotary head disk assembly ❺.

Note: Pay full attention not to touch the head tip by hand or damage it by striking.
In order to prevent from a damage at the head tip, move the head disk by 90° and remove/mount, as shown in the Fig. Ⓐ.

Note: When the rotary head disk assembly is engaged in and it is difficult to be removed, tighten the removed hexagonal socket bolts ❼ little by little into the screw holes moved by 90° from the original positions.
Head disk can be easily removed by raising it with two screws.

7-2. MOUNTING OF THE ROTARY HEAD DISK ASSEMBLY

1) Insert the rotary head disk ❶ in place, being careful of the direction so that the red and white leads are in the right place.

Note: Be careful not to damage the contact surface of the internal diameter by unreasonable insertion or slant insertion. Be sure to make straight insertion without giving any unreasonable force.
If head disk horizontally moves a little round the center of screw holes.

2) Insert the pin ❷ into the mounting hole, and tighten the hexagonal socket bolts ❸, then, solder the leads.

Note: After tightening, pull out the pin.
Under the state of pin being inserted, be careful not to turn the head disk.

3) Attach the upper drum, being careful (as during removal) not to move the adjusting plate.
While pressing the two points that determine the height, tighten hexagonal socket bolts.

7-3. CAUTION FOR REPLACING THE DRUM ASSEMBLY

1) Drum motor is not separated into rotor and stator. Also, there is not spacer between drum assembly and motor.
2) Motor is attached to the repairing drum assembly.

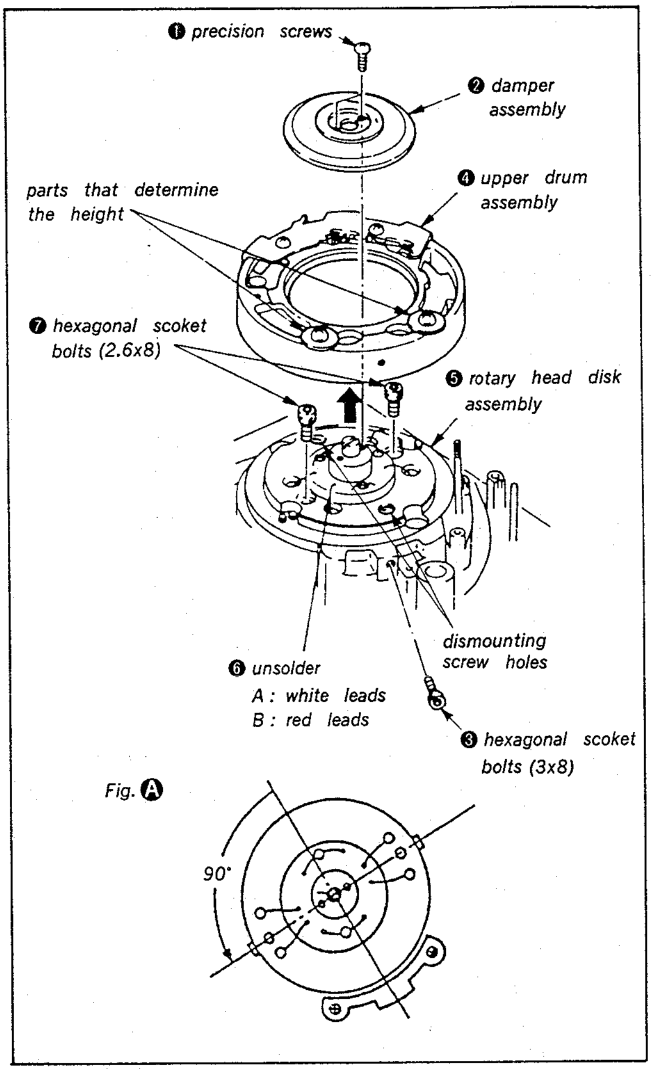

❶ precision screws
❷ damper assembly
❹ upper drum assembly
parts that determine the height
❼ hexagonal scoket bolts (2.6x8)
❺ rotary head disk assembly
dismounting screw holes
❻ unsolder
A : white leads
B : red leads
❸ hexagonal scoket bolts (3x8)
Fig. Ⓐ
90°

Fig. 7-1 Removal of the rotary head disk assembly

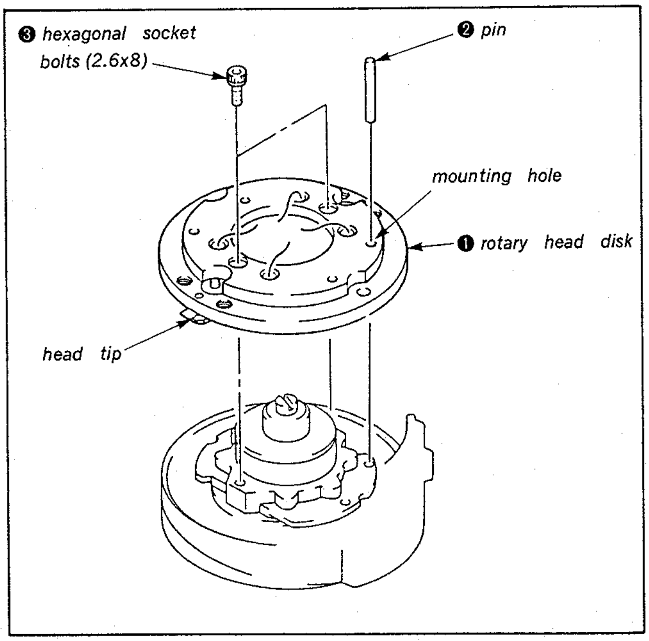

❸ hexagonal socket bolts (2.6x8)
❷ pin
mounting hole
❶ rotary head disk
head tip

Fig. 7-2 Mounting of the rotary head disk assembly

SECTION 8
ELECTRICAL ADJUSTMENTS

During the adjustment, see the parts arrangement diagmam relevant to adjustment on page 90.

This section provides all necessary information and instructions for complete adjustment of the electronic circuits in this machine.

[EQUIPMENT REQUIRED]

1) Color TV receiver
2) Oscilloscope Dual-trace. Bandwidth more than 15 MHz with delay mode
3) Frequency counter (more than seven digits)
4) NTSC pattern generator
5) Digital voltmeter (10MΩ)
6) Audio generator
7) Audio level meter
8) Distortion meter
9) Alignment tape Type KR5-1V Code No.: 8-969-995-92

[Preparatory Set-up for Adjustment]

For these adjustment procedures involving use of a video input signal the NTSC pattern generator is to be connected to the VHF antenna terminals. This RF signal is processed by the tuner and I.F. circuits within the VTR. It is important that the video out signal from the I.F. circuit satisfies the specifications. The video signal must be checked with an oscilloscope connected to VIDEO OUT terminal on the VS-33 board (CNJ001 : 75Ω terminated). Check that the video signals are flat when the amplitude of the horizonal sync signal is about 0.3V, the amplitude of the video portion is about 0.7V, and the amplitude of the burst signal is about 0.3V. The video signal (color-bar signal) used in this adjustment is shown in Fig. 8-1.

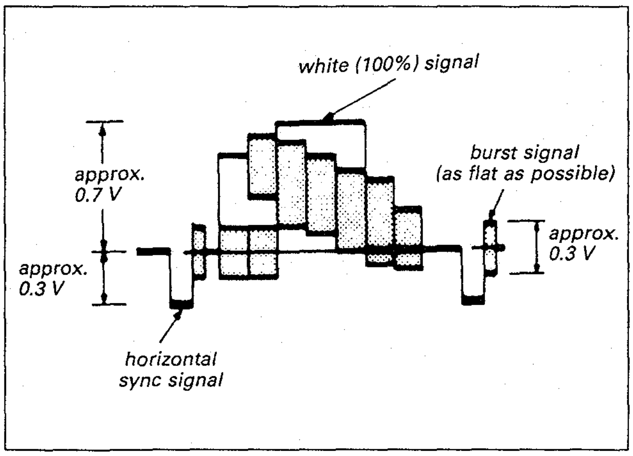

white (100%) signal
approx.
0.7 V
approx.
0.3 V
burst signal
(as flat as possible)
approx.
0.3 V
horizontal
sync signal

Fig. 8-1. Color-bar signal of pattern generator

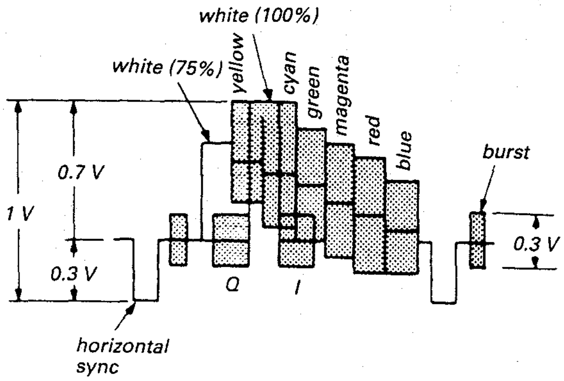
[Alignment tape]
KR5-1V

Tape speed	Video signal	Audio signal	Playing time
20.0mm/ sec. (β II)	Color bars	3kHz, −10dB	4 min. for each segment
	Monoscope	333Hz, −30dB	
	RF sweep	5kHz, −30dB	
	Tracking	1 kHz, −10dB	
	Color bars	Beta hifi 400Hz ±25kHz DEV	
13.3mm/ sec. (β III)	Monoscope	5kHz, −30dB	
	Color bars	3kHz, −10dB	

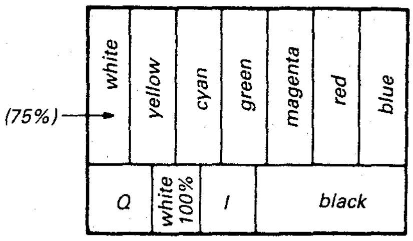
[Color Bar Signal]

The 75% color bar signal recorded on the alignment tape is shown in Fig. 8-2.

Note: Measure at VIDEO OUT terminal on the VS-33 board (75Ω terminated).


white (100%)
white (75%)
yellow
cyan
green
magenta
red
blue
burst
0.7 V
1 V
0.3 V
0.3 V
Q
I
horizontal
sync

color bar signal waveform

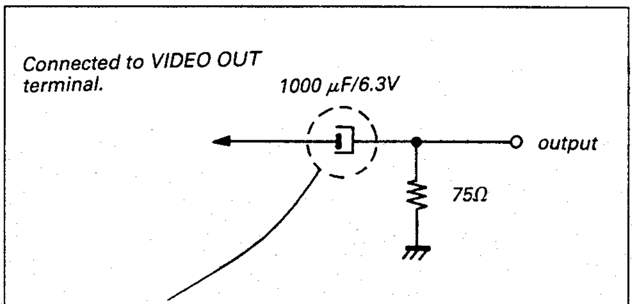

white
yellow
cyan
green
magenta
red
blue
(75%)
Q
white 100%
I
black

color bar pattern

Fig. 8-2. Color-bar signal of alignment tape

[75Ω Teminating Method]

To terminate the video output terminal follow the steps shown in Fig. 8-3.


Connected to VIDEO OUT terminal.
1000 μF/6.3V
output
75Ω

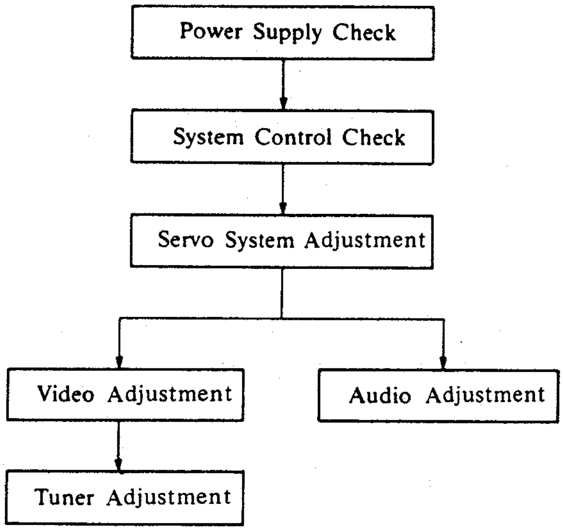
Note: *The machine may be damaged if it is terminated in 75Ω before cutting the DC component.*

Fig. 8-3. 75Ωterminating circuit

[Required Levels Impedances of Input and Output]

Inputs and outputs

Video input	Phono jack 1Vp-p±0.5Vp-p, 75 ohms, unbalanced, sync negative
Video output	Phono jack 1Vp-p±0.5Vp-p, 75ohms, unbalanced, sync negative
Audio input	Phono jacks −10dBs (0dBs=0.775V rms), 47k ohms
Audio output	Phono jacks −10dBs (at load impedance 47k ohms) less than 10k ohms


Power Supply Check
System Control Check
Servo System Adjustment
Video Adjustment
Audio Adjustment
Tuner Adjustment

8-1. POWER SUPPLY CHECK (PS-197Board)

Measure in E-E mode (power supply switch ON).

[Adjustment Sequence]

The adjustment should be performed following the sequence below.

Mode	E-E
Measurement Equipment	Digital voltmeter
Checking of EVER 5.5V	
Measurement point	pin ⑦ of CN001
Specified Value	5.5±0.1Vdc
Checking of SWD 9V	
Measurement Point	Pin ① of CN001
Specified Value	9.0±0.1Vdc
Checking of SWD 12V	
Measurement Point	Pin ③ of CN001
Specified Value	12.0±0.2Vdc

[Confirmation Method]

1) Be sure that the voltage of the respective measurement points satisfy the spehified values.

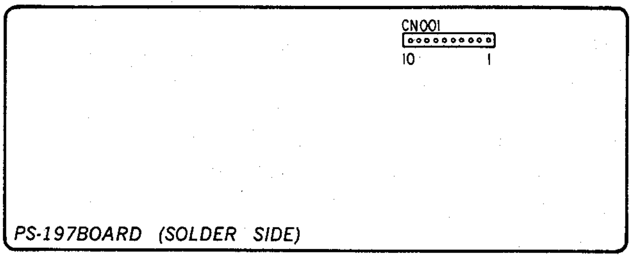

CN001
10
1
PS-197BOARD (SOLDER SIDE)

Fig. 8-4. Component layout

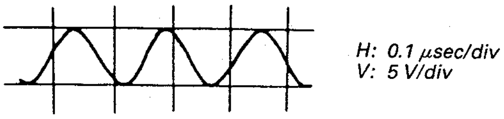
8-2 SYSTEM CONTROL CHECK (VS-33Board)

8-2-1 Clock Frequency Check

Mode	E-E
Signal	None
Measurement Point	Pin ㉛ of IC801
Measurement Equipment	Frequency counter
Specified Value	4.19 MHz±2%

[Confirmation Method]

(1) Confirm by a frequency counter that the frequency of pin ㉛ of IC801 is 4.19MHz±2%.



f=4.19MHz±2%

Fig. 8-5. Clock frequency

8-3. SERVO SYSTEM ADJUSTMENT

8-3.1. Drum/Capstan Servo System Adjustment

1. Voltage Check (VS-33 Board)

Measurement Point	Pin ⑪ of IC901
Measurement Equipment	Digital voltmeter
Specified Value	5.1±0.3 Vdc

[Confirmation Method]

(1) Pin ⑪ of IC001 shall be 5.1±0.3 Vdc.

2. Clock Check (VS-33 Board)

Measurement Point	Pin ⑥ of IC901 (3.58 MHz)
Measurement Equipment	Oscilloscope
Specified Value	Approx. 4.5Vp-p.

[Confirmation Method]

(1) Pin ⑥ of IC901 shall be about approx. 4.5Vp-p.

3. RF Switching Position Adjustment (VS-33 Board)

Mode	Playback
Signal	Alignment tape β II color bar
Measurement Point	CH1: Pin ① of CN903 (PG) (VS-33 board) CH2: Pin ⑨ of IC901 (SWP) (VS-33 board)
Measurement Equipment	Oscilloscope
Adjustment Element	(1)RV902
Specified Value	T_1 = 1.6msec

[Adjustment Method]

(1) Adjust RV902 so that the Lock Phase of RF SW PULSE (Ach) becomes specified value.

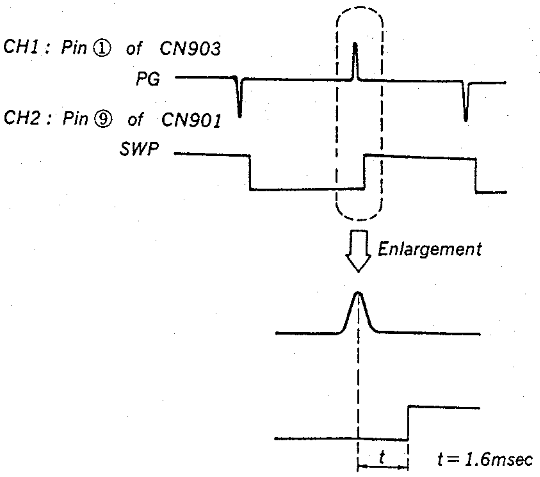


Fig. 8-6.

4. Tracking Center Adjustment (VS-33 Board)

Mode	β II recording
Signal	Color bar
Measurement Point	CH1: Pin ㉖ of IC901 (REC CTL) CH2: Pin ② of IC901 (TRACON.M.M)
Measurement Equipment	Oscilloscope
Adjustment Element	RV901
Specified Value	100±50 μsec

[Adjustment Method]

1) Position the tracking knob to center click.
2) Adjust RV901 so that the phase difference becomes 100±50 μsec.

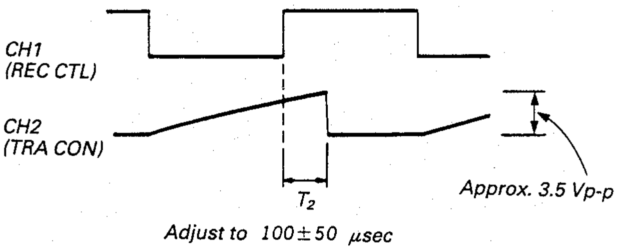


Fig. 8-7.

8-4. VIDEO SYSTEM ADJUSTMENT

As a rule, first the playback system is aligned with an alignment tape to check that it operates normally, then the recording system is aligned.

The adjustment sequence is shown below. The Y signal and chroma signal systems are aligned for both playback and recording system.

Color video signals supplied by the pattern generator is used for video system adjustment in the record mode. Check that the sync and color burst signals conform to the specifications designated in "Preparatory Set-up for adjustment" in Fig. 8-1.

8-4-1. [Playback system adjustment]
  1. Playback amplifier frequency response adjustment
  2. De-emphasis level check
  3. Playback Y signal level adjustment
  4. 3.58 MHz VXO adjustment

8-4-2. [Record system adjustment]
  1. AFC VCO adjustment
  2. Comb filter adjustment
  3. Comb AGC adjustment
  4. SYNC AGC adjustment
  5. SYNC tip carrier set and deviation adjustment
  6. 4.27 MHz carrier balance adjustment
  7. Chroma record current check

8-4-1. Playback System Adjustment

1. Playback Amplifier Frequency Response Adjustment (RP-67 Board)

- Adjust both A-ch and B-ch.
- B-ch is indicated by [ ].

Mode	Playback
Signal	Alignment tape βII RF sweep
Measurement Point	Pin ③ of CN302 (Oscilloscope) Pin ① of CN302 (External trigger)
Measurement Equipment	Oscilloscope
Adjustment Element	RV301[RV302]
Specified Value	5.1 MHz becomes 84±5% against 3.58 MHz

[Adjustment Method]

(1) Increase the output level to maximum with the TRACKING knob.

(2) Set the trigger slope to −[+].

(3) Adjust RV301 [RV302] so that 5.1 MHz becomes 84±5% against 3.58 MHz.

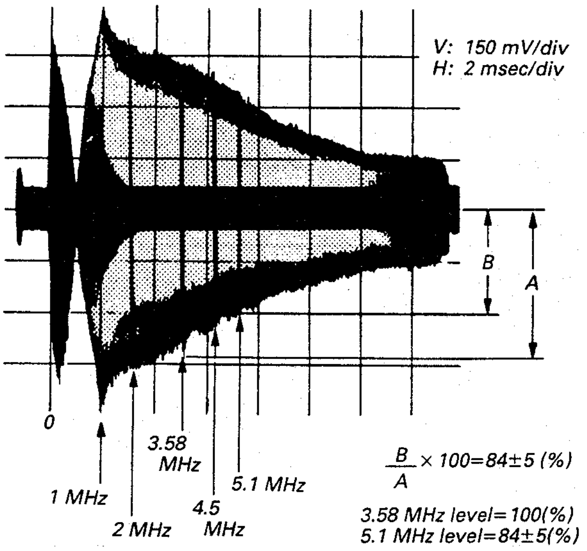


Fig. 8-8.

2. De-emphasis Level Check (VS-33 Board)

Mode	Playback
Signal	Alignment tape βII color bar
Measurement Point	Pin ④ of IC005
Measurement Equipment	Oscilloscope
Specified Value	1.20±0.15 Vp-p

[Confirmation Method]

(1) pin ④ of IC005 shall be 1.20±0.15 Vp-p

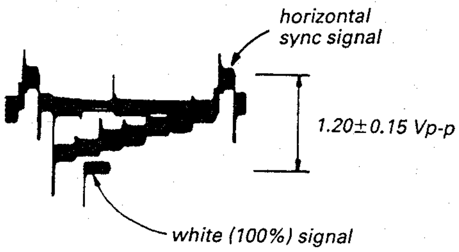


Fig. 8-9.

3. Playback Y Signal Level Adjustment (VS-33 Board)

Mode	Playback
Signal	Alignment tape βII color bar
Measurement Point	Pin ② of CN601
Measurement Equipment	Oscilloscope
Adjustment Element	RV004
Specified Value	1.00±0.05 Vp-p

[Adjustment Method]

(1) Adjust to 1.00±0.05 Vp-p with RV004.

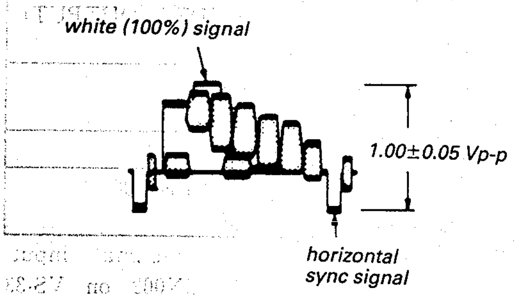


Fig. 8-10.

4. 3.58 MHz VXO Adjustment (VS-33 Board)

Mode	Playback
Signal	Alignment tape βII or βIII color bar
Measurement Point	Q905 Ⓔ
Measurement Equipment	Frequency counter
Adjustment Element	RV012
Specified Value	3579545 Hz±25 Hz

[Adjustment Method]

(1) Adjust to 3579545±25 Hz with RV012.

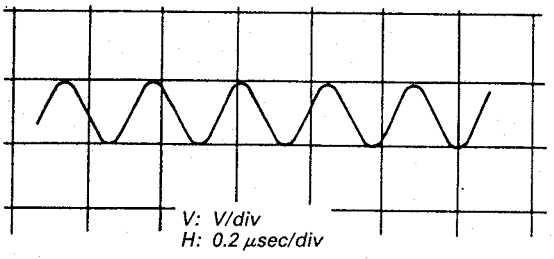


Fig. 8-11.

8-4-2. Record System Adjustment

1. AFC VCO Adjustment (VS-33 Board)

Mode	Record or E-E
Signal	Color bar
Measurement Point	Pin ㉖ of IC002 (DC range)
Measurement Equipment	Oscilloscope
Adjustment Element	RV011
Specified Value	4.40±0.05 Vdc

[Adjustment Method]

(1) Adjust with RV011 so as to become specified value.

(2) Playback the color bar portion of the alignment tape, and check the color on the monitor TV for correct quality.

2. Comb Filter Adjustment (VS-33 Board)

Mode	Record or E-E
Signal	Color bar
Measurement Point	Pin ㊷ of IC001
Measurement Equipment	Oscilloscope
Adjustment Element	RV007 & LV001

[Adjustment Method]

(1) Minimize the residual chroma component by alternately adjusting RV007 and LV001.

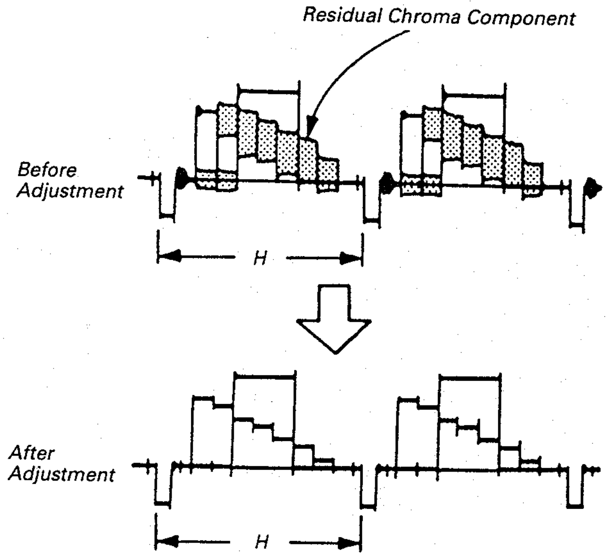


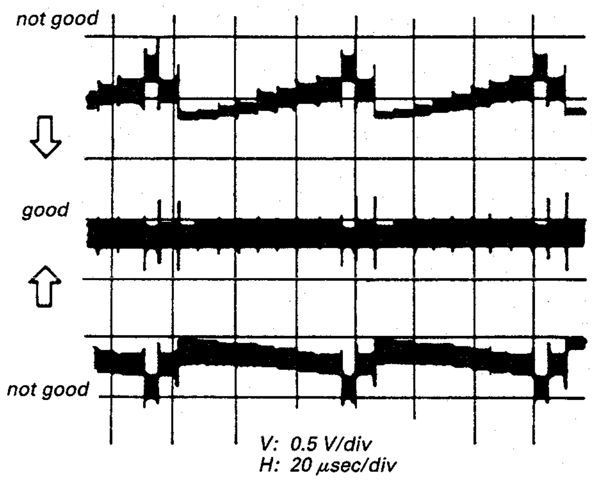
Fig. 8-12.

3. Comb AGC Adjustment (VS-33 Board)

Mode	Record or E-E
Signal	Color bar
Measurement Point	Pin ⑧ of IC003 (Attach 22 kΩ resistor to tip of the probe (10 : 1))
Measurement Equipment	Oscilloscope
Adjustment Element	RV005

[Adjustment Method]

(1) Adjust to eliminate level differences for each H step with RV005.



Note: *After comb AGC is adjusted, adjust the sync AGC adjustment.*

Fig. 8-13.

4. SYNC AGC Adjustment (VS-33 Board)

Mode	Record or E-E
Signal	Color bar
Measurement Point	Pin ② of CN601
Measurement Equipment	Oscilloscope
Adjustment Element	RV008
Specified Value	1.00±0.05 Vp-p

[Adjustment Method]

(1) Adjust to 1.00±0.05 Vp-p with RV008.

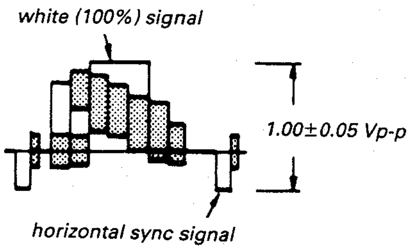


Fig. 8-14.

5. SYNC tip Carrier Set and Deviation Adjustment (VS-33 Board)

SYNC tip carrier set adjustment	
Mode	E-E
Signal	Non-signal (Note: 1))
Measurement Point	Pin ㉕ of IC001
Measurement Equipment	Frequency counter
Adjustment Element	RV002
Specified Value	4.42±0.05 MHz
Deviation adjustment	
Mode	Record and Playback
Signal	Color bar
Measurement Point	CNJ001 (VIDEO OUTPUT) (Note: 2))
Measurement Equipment	Oscilloscope
Adjustment Element	RV001
Specified Value	Playback level is 1.00 ±0.05 Vp-p

Note: 1) In order to make into non-signal input, shortcircuit the Pin ④ of CN002 on VS-33 board and GND.

2) Be sure to turn ON the Super Beta switch.

3) The video output pin should be terminated at 75Ω.

[Adjustment Method]

(1) Set to E-E mode by inputting the color bar signal.

(2) Connect an oscilloscope to the Pin ⑰ of IC005 and check the Y signal level.

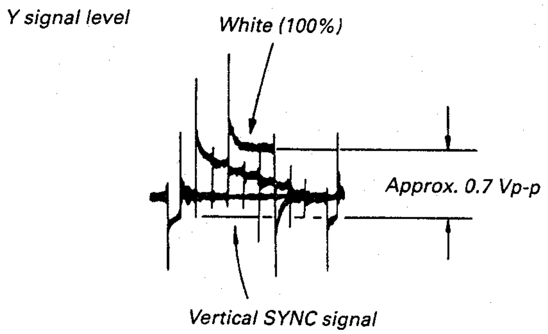


Fig. 8-15.

(See Fig. 8-15. This Y signal level and the playback Y signal level, which will be described later, become proportionate (proportional to the deviation). The criterion of the deviation adjustment (RV001) is to make this Y signal level to 0.7 Vp-p.)

(3) As a non-signal input (Note: 1)), set to E-E mode.

(4) Connect the frequency counter to Pin ㉕ of IC001 and adjust with RV002 so that it becomes 4.42±0.05 MHz.
(SYNC tip carrier set adjustment)

(5) Input the color bar signal and record it.

(6) Playback the recorded section and check the playback Y signal level of CNJ001. (VIDEO OUTPUT.)
Specification: Be sure to it is 1.00±0.05 Vp-p.

Playback Y signal level

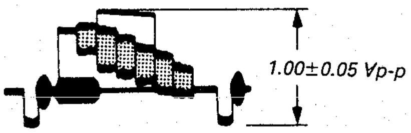


Fig. 8-16.

(7) In the event it is out of specification, input the color bar signal and set to the E-E mode. Then adjust with RV001 so as to correct the level difference of the playback Y signal while observing the Y signal level of the Pin ⑰ of IC005 collector and thereafter repeat items 3) to 6).

6. 4.27 MHz Carrier Balance Adjustment (VS-33 Board)

Mode	Record or E-E
Signal	Color bar
Measurement Point	Pin ㊴ of IC002
Measurement Equipment	Oscilloscope
Adjustment Element	RV010
Specified Value	Minimize the 4.27 MHz component

[Adjustment Method]

(1) Minimize the 4.27 MHz component with RV010.

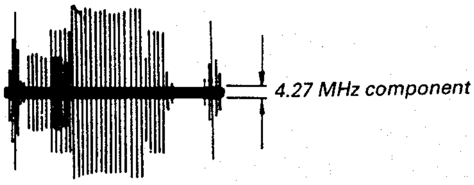


Fig. 8-17.

7. Chroma Record Current Check (VS-33 Board)

Mode	Record or E-E
Signal	Color bar
Measurement Point	Pin ④ of CN020
Measurement Equipment	Oscilloscope
Specified Value	75±10mVp-p

[Confirmation Method]

(1) Be sure that the level of the color bar "cyan" to specified value.

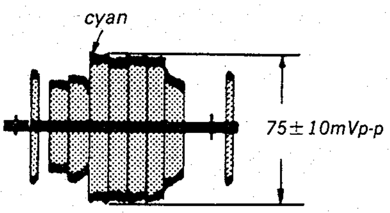


Fig. 8-18.

8-5. AUDIO SYSTEM ADJUSTMENT

Adjustments of the audio system shall be made in the βIII mode, otherwise note. Use a Dynamicron tape (L125~L500) for adjustments.

[Connection of Related Equipment]

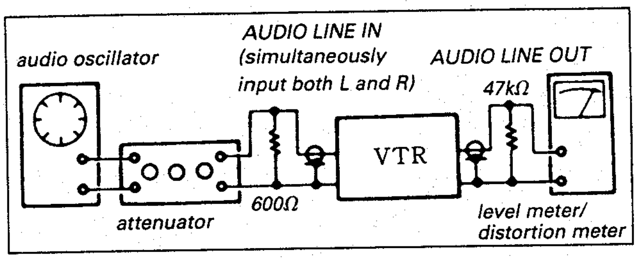


Fig. 8-19.

[Adjustment Sequence]

1. ACE head adjustment. . See mechanism adjustments.
2. E-E output level check.
3. Playback frequency characteristics check.
4. Playback output level check.
5. Bias current adjustment.
6. Overall level characteristics and distortion ratio checks.
7. Overall S/N check.

1. ACE Head Adjustment

See the "Mechanism adjustments".

2. E-E Output Level Check

Mode	E-E
Signal	333 Hz−10 dBs
Measurement Point	Audio output terminal
Measurement Equipment	Audio level meter
Specified Value	−10±2dBs

[Confirmation Method]

(1) Input a 333 Hz/−10 dBs signal both simultaneously to the audio line input.

(2) Confirm that the audio line output level is −10±2 dBs.

3. Playback Frequency Characteristic Check

Mode	Playback
Signal	Alignment tape βII 333 Hz (monoscope) and 5 kHz (RF Sweep) portions
Measurement Point	Audio output terminal
Measurement Equipment	Audio level meter
Specified Value	The 5 kHz level is 0^{+2}_{-7} dB against 333 Hz

[Confirmation Method]

(1) Playback 333 Hz (βII monoscope) and 5 kHz (βII RF sweep) from the alignment tape and confirm so that the level difference between 333 Hz and 5 kHz 0^{+2}_{-7} dB.

4. Playback Output Level Check

Mode	Playback
Signal	Alignment tape βII 333 Hz (monoscope) portion
Measurement Point	Audio output terminal
Measurement Equipment	Audio level meter
Specified Value	−10±3 dBs

[Confirmation Method]

(1) Be sure to set the playback output level to −10±3 dBs.

5. Bias Current Adjustment (VS-33 Board)

Check that the Tape path adjustment and the Playback frequency characteristics check, and the Playback output level check have been performed.

(1) Supply a 333 Hz signal to the audio line input.
(2) Connect level meter to audio line output.
(3) Adjust attenuator so that the level meter becomes −30 dBs.
(4) Record.
(5) Record by making the audio line input signal into 7 kHz.
(6) Playback the recorded portion, and measure the output level of 333 Hz and 7 kHz.
(7) Confirm that the 7 kHz playback output level against the 333 Hz playback level is 0±1 dB. When it is out of specifications, adjust RV701 and repeat items (1) to (7).

6. Overall Level Characteristics and Distortion Ratio Checks

(1) Supply audio signals of 333 Hz/−10 dBs to both simultaneously of the audio line input, and confirm that the LED level meter indicates β level.
(2) Record.
(3) Playback the recorded portion.
(4) Connect the level meter and distortion meter to the audio line output pin.
(5) Confirm that the playback level is −10±3 dBs.
(6) Confirm that the distortion ratio is within 5%.

7. Overall S/N Check

(1) Supply a 333 Hz signal simultaneously to audio line input and adjust so that audio line input level is −10 dBs.
(2) Record signals.
(3) Switch to no-signal input while continuing in record mode.
(4) Playback the recorded portion, and confirm that the level difference between the 333 Hz signal and no-signal portion (the portion immediately after the 333 Hz signal) is more than 33 dB.

8-6. TUNER SYSTEM ADJUSTMENT

1. RF AGC Adjustment (VS-33 Board)

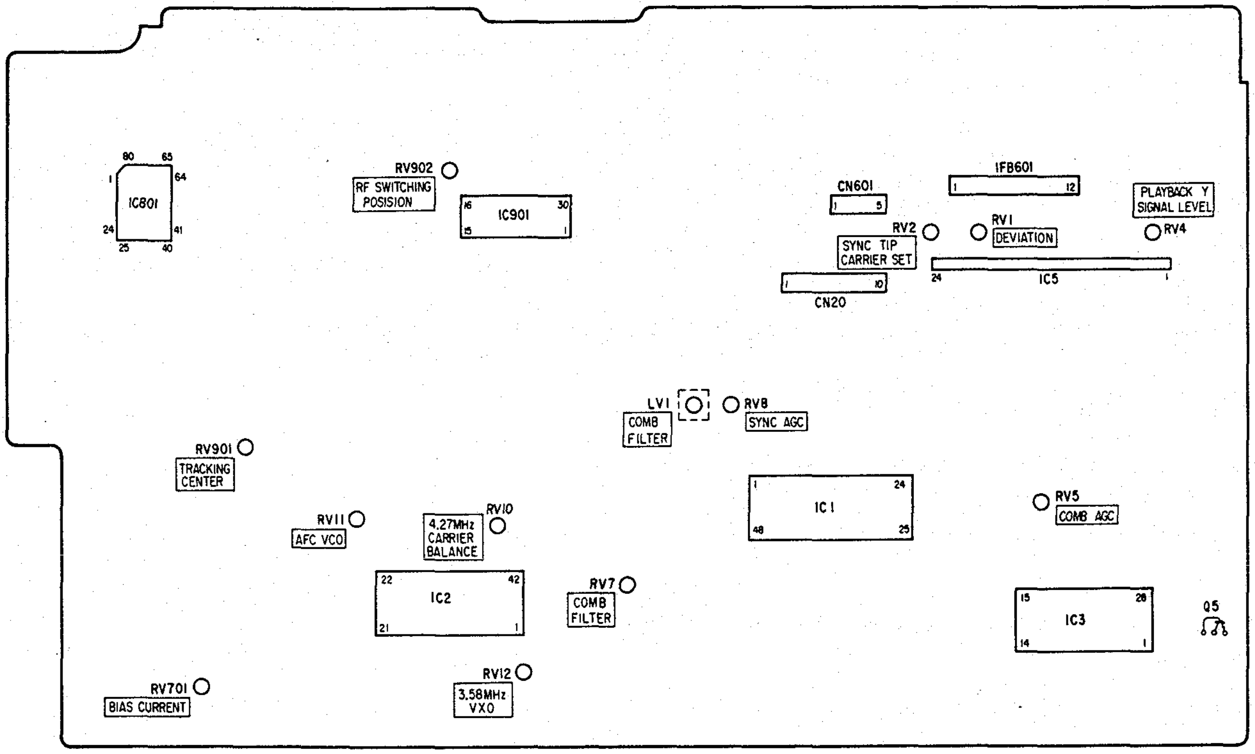
Signal	VHF TV broadcast signal
Adjustment Element	AGC VR : Inside of IFB601

[Adjustment Method]

(1) Adjust the monitor TV for best contrast.
(2) Adjust AGC VR (inside of IFB601) so that snow noise visible.
(3) Turn AGC VR (inside of IFB601) in the opposite direction to that in (2) and set at the point where snow noise disappears.
(4) Receive each channel and confirm that there is no beat picture disturbance or snow noise.

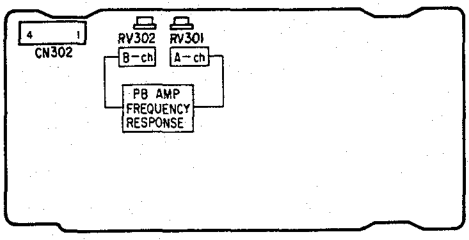
8-7. ADJUSTMENT ELEMENT LOCATION

VS-33 BOARD (CONDUCTOR SIDE)



80
65
1
64
IC801
24
41
25
40
RV902
RF SWITCHING POSISION
16
IC901
30
15
1
CN601
1
5
IFB601
1
12
PLAYBACK Y SIGNAL LEVEL
RV2
RV1
DEVIATION
RV4
SYNC TIP CARRIER SET
1
10
CN20
24
IC5
1
LV1
COMB FILTER
RV8
SYNC AGC
RV901
TRACKING CENTER
1
24
IC1
48
25
RV5
COMB AGC
RV11
AFC VCO
4.27MHz CARRIER BALANCE
RV10
22
42
IC2
21
1
RV7
COMB FILTER
15
28
IC3
14
1
Q5
RV701
BIAS CURRENT
RV12
3.58MHz VXO

RP-67 BOARD (COMPONENT SIDE)



4
1
CN302
RV302
RV301
B-ch
A-ch
PB AMP FREQUENCY RESPONSE